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Strong Condemnation of Latrines

In spite of the many perfect sanitary fixtures offered by the manufacturers of sanitary products in the United States, we are still frequently called upon to assist plumbing inspectors and health officers to fight the introduction of latrines in their cities and towns. We contributed somewhat to the signal victory achieved by A. C. Shaver, the live-wire plumbing inspector of Pasadena, Cal., and we are putting in a few punches in Kansas and Missouri at the present time.

The main point of attack is the school-installation. Of all places where the latrine should not go (if indeed under modern conditions it should ever be allowed) the public schools are to be considered first. The health of the boys and girls is all-important and we are confident that if the public understood the unsanitary character of the latrine, it would express itself in such forceful terms that it would be tabooed as vigorously and quickly as was the common drinking-cup.

The renewed attempts to introduce latrines into American schools offer opportunity for graft. With latrines, labor and material can be juggled with in a manner which is not possible when modern up-to-date, ready-to-install, water-closet combinations and plumbing apparatus are used. In one case the latrine-trough was shuffled in with the building-excavation cost; the trough-lining was conveniently lost in the figures on heating and ventilating ducts; the carpenter's bill included most of the rest; the seats were furnished gratis with the order for the lavatories. Nevertheless, a large sum of money appeared in the final accounting as due for the Ketchem Kummin & Goin Latrine System. The name, of course, is fictitious, but it was a perfect "system" all right.

The objections to latrine-fixtures can easily be stated in few words. Large quantities of excreta can remain in the trough for a considerable time. Odors are communicated freely from one seat to those adjoining. The latrine offers an abnormal area of fouling surface. A considerable portion of this fouling surface is alternately wet and dry, due to the irregularity and insufficiency of flushing.

Quite recently we have received urgent requests for a list of cities in the United States whose ordinances permit or prohibit the use of latrines. These requests came from plumbers, plumbing inspectors and sanitary engineers and revealed a lack of sanitary ammunition. This editorial will supply the need in an effective manner. We sent out the following questions to 100 of the leading cities in the country. Replies were furnished promptly, showing the alertness of our municipal health guardians and their interest in the public welfare. With the questions, we publish the most comprehensive replies.

Questions Submitted:

1. Have you an ordinance against latrines?
2. Do you permit them under any circumstances, and, if so, under what conditions?
3. Give reasons for condemnation or approval of latrine-installation.

Some Opinions of Leading Sanitarians.

A. R. McGonegal, Inspector of Plumbing, Washington, D. C.—1 and 2. The plumbing regulations forbid the installation of latrine water-closets or even individual water-closets flushed from a single tank. This prohibition has been in effect for approximately 15 years.

3. One of the cardinal principles of sanitary plumbing construction is to remove as quickly as possible and in as direct a manner as possible human waste matter. On account of the principle upon which latrines are built, this is an absolute impossibility as the matter deposited must remain in the trough or pipe for a longer or shorter time before the flush takes place. The formation of the latrine is such that there is always more or less foul surface which is rarely, if ever, cleansed. Investigation of existing latrine-systems at the time the matter of their prohibition was being looked into showed that less than one per cent of those actually in service had first-class care and not less than 20 per cent appeared to have no care at all. The perforated flush-pipes of the trough pattern were in many cases found entirely stopped up with impurities in the water. Others were stopped up for a portion of their length and still others were so installed as to direct the wash away from the trough sides. In almost every instance foecal matter was adhering to the sides of the trough. The troughs and pipe-latrines were in nearly every case very rough after being installed a year or more. With such of those as had been exam-

eled, it was found that the expansion and contraction had caused the enamel to break and chip until in some cases little of the original surface was left; therefore at the same time that latrines were prohibited here the installation of iron closet-bowls inside of buildings was also made a part of this prohibition.

To my mind there can be but one argument in favor of the use of the latrine and that is its lower initial cost of installation. **It is a water-waster and an unclean thing and it should not be tolerated.**

In these days of modern sanitation, when every energy is bent toward the exclusion of flies and the disinfection of human excreta, both liquid and otherwise, passing from known carriers of the bacilli of enteric diseases, it would appear to be strange that a modern city government should allow the installation of a fixture adopted for the deposit of excreta from those who are in the initial stage of disease, as well as from persons who are known as "carriers" who, on account of their constitutions, appear to be immune from the actual disease, but are allowed to mingle with their fellow-workmen or the public at large, and through some careless means such as the use of a latrine closet, possibly infect other users. Such deposits adhering to the sides of an unclean fixture of this character can readily serve as gathering place for flies which may later cause sickness and death to some unsuspecting person.

Wm. G. Kuselebaum, Board of Health, New Bedford, Mass.—An ordinance to this effect will soon go before the city government. This will prohibit the use of latrines on account of their great unsanitary fouling surface.

A. W. Packard, Executive Officer, Board of Health, Brockton, Mass.—We would advise that we have no ordinances against latrines, consequently we do not permit them. (A paradox with humor and possible truth.)

Thos. M. Landers, Chief Inspector Plumbing, Richmond, Va.—Nos. 1 and 2. Our plumbing ordinance contains no reference to latrines. We have a few latrines yet in our public schools that were installed some years ago, but the majority of them have been taken out and installed in outside buildings, but we have had recently installed in the basement of one of our new public schools three ventilated latrines of a new type. They have the individual self-closing seat, with openings under each seat. The air is forced into the toilet-room by a fan system, and then passes through the openings in the latrine under the seat, and follows along to the end of same and thence into a galvanized iron duct which connects to a large terra-cotta pipe below the floor through which all local odors are conveyed across the room to a heated flue in which there is a stove where fire is constantly kept, both winter and summer. This arrangement has worked very satisfactorily so far, and there is no local odor in the toilet rooms. This method of ventilating latrines by a forced-air ventilation has never been tried out in this city, and I am very anxious to get what information I can on such a system.

No. 3. I have not approved in the installation of latrines in many years, for I have strongly advocated the use of the individual seat-action closet with closed tank for all such purposes. My reasons for not approving the latrine type of water-closets is their large fouling surface, which tends to the accumulation of filth in their construction that causes local odors to escape into the room.

C. E. Ford, M. D., Supt., Sec'y of Board, Cleveland, O.—Replying to your inquiry of recent date, I have to say that there is no ordinance against latrines nor any local regulations governing them. A new building and tenement code which is now being started will undoubtedly cover the points you mention.

J. J. McMahon, Sec'y Board of Health, Mobile, Ala.—We have no latrines, with the exception of one located in a public-comfort station in a central public square.

Walter S. Wheeler, M. D., Health Commissioner, Kansas City, Mo.—We have not at present any ordinance prohibiting latrines, for the reason that our ordinances call for all closets to be built according to specifications, 4x8 ft., of concrete or burned brick. These closets are rapidly being eliminated from our city by compelling the connection with sewers.

Clyde C. Slemons, M. D., Health Officer, Grand Rapids, Mich.—1. We have an ordinance against latrines. **2. We do not permit them under any circumstances.** 3. The reasons for prohibiting latrines are that they are foul both inside and out, also not automatically controlled, the average janitor flushing only three times a day, which is not sufficient; also it is an impossibility to clean them.

J. W. Clemmer, M. D., Health Officer, Columbus, O.—Our plumbing code, of which I am sending you a marked copy, when enacted prohibited the use of latrines except conditionally in yard compartments. An amendment (page 40 of the code), now permits latrines in buildings when properly ventilated, herewith reproduced.

Sec. 74. Long water hopper water-closets, trough and similar appliances, shall not be installed in any building The provisions of this section shall also apply to the dry closet system or any similar system of closets in which the venting, back venting or local venting is to be made otherwise than in this ordinance. Latrine range closets installed in any building shall have not less than fifteen square inches of ventilation for each seat emptying into an air-tight vent duct at rear closets, that shall be of capacity equal to the number of closets connected and vent duct must be connected to heated stack or have forced draft. Also to have a depression in bowl under seat opening that will stand full of water at all times, there being not less than two inches of water in each depression.

Sec. 83. Where latrines and school range closets or any similar conditionally permissible fixtures are used with the approval of the inspector, they shall be of white enameled iron, glass or other impervious material, properly supplied with water from special tanks and shall have not less than 25 square inches of ventilation for each closet. In workshops and factories no closets or urinals shall be installed unless each closet has not less than 15 square inches of ventilation and each urinal shall have not less than 25 square inches of ventilation for each stall, emptying into an air-tight vent duct at rear of closets or urinals that shall be of capacity equal to the number of closets or urinals connected, and vent duct must be connected to heated stack or have forced draft.

The cause of this amendment came from the fact that a local firm, manufacturers of drainage equipments, puts on the market a urinal and latrine closet especially adapted for schools. I've seen these fixtures in operation in a number of buildings. The automatic flush and perfect suction ventilation renders these fixtures satisfactory and sanitary. I am not authority on house drainage, nor am I advertising plumbing goods, but I am pleased with the latrines in use made by this company. Before their advent I opposed all such devices and wrote the section since amended.

C. P. Botsford, Supt. Board of Health Commissioners, Hartford, Conn.—Replying to your communication of

October 7th, Hartford has an ordinance forbidding the installation or maintenance of latrines on streets having sewers and as the sewer-constructions have been almost coincident with the developments of the buildings, we have at present less than one hundred privies in the city. If building developments occur on streets not provided with sewers and in places where it would be impossible to construct cesspools, there seems to be nothing in our ordinances to forbid the construction of a privy. As a matter of fact practically no privies are installed except temporary ones for the use of workmen during the construction of a building, and our rule has been in this case during the summer months to compel the installation of a temporary water-closet as soon as the cellar was completed and the drain in place.

Joseph S. Neff, M. D., Director Department of Public Health and Charities, Philadelphia, Pa.—Latrines, Etc.—Rule 86. Latrines, range, trough, long hopper water closets, and similar appliances will not be permitted inside of a building. Where they are used in a special building outside of the building proper, they shall be iron enameled and supplied and flushed with water from special reservoirs; and not located within (20) feet of a building when practicable.

In re questions No. 3 and 4, I respectfully advise you as follows:

No. 3. The principal reason for objection to their use is that they have large fouling surfaces which throw off fetid odors that are a menace to health. We advocate the use of individual water-closets of a pattern presenting the least fouling surface, the walls of which are thoroughly flushed at each discharge of water from the reservoir.

"Domestic Engineering"'s Washington correspondent reports to this effect:

The use of latrines, trough water-closets, or series of water-closets flushed from a single tank are now positively prohibited by the plumbing regulations of the District of Columbia according to an amendment which became effective October 6th, last.

Other amendments made consisted of prohibiting the use of cast iron, pressed steel, or enameled iron or steel water-closet bowls or tanks for interior water-closets.

Projections beyond the building line, but below street level, may now be used in which to place water-closets and urinals, provided direct light and ventilation can be secured through a window opening directly into an area, which is open to the sky and has dimensions not less than three feet in the clear. The area, however, is to be enclosed properly with a suitable railing and not encroached upon.

It is now permitted to place water-closets or urinals in bay windows or other projections beyond the building line on the ground floor if it is possible to properly light and ventilate the room by means of the regulation window-opening, or the requirements of indirectly ventilating the room can be met. The provision is made in the amendments that access to the toilet-room must be from the inside and no door leading to the outside shall be constructed.

Water-closets or urinals can now only be placed in rooms arranged exclusively for such use, and the room must be inclosed with a tight partition, and comply with the requirements for light and ventilation.

W. L. Young, Health Department, Springfield, Mass.—Replying to yours of the 7th inst. relative to installation of latrines in this city, would say the matter is regulated under the following statute:

Chapter 75, Section 70.—"If the city council of a town having a population of more than five thousand accepts the provisions of this section, or has accepted the corresponding provisions of earlier laws, no privy vault shall be constructed upon premises which are connected with a public or private sewer or which abut on a public or private street, court or passageway in which there is a public sewer opposite thereto, without permission in writing having first been obtained from the board of health of such city or town. And if, in the opinion of said board, a privy vault so situated is injurious to the public health, it shall declare the same to be a nuisance and shall forbid its continuance, and the provisions of the three preceding sections shall apply thereto."

This act was accepted by the City Council Sept. 15th, 1890. The preceding sections referred to provide that the Board of Health shall order the removal within a reasonable time. If order is not obeyed the Board of Health may remove, the expense to be paid by the owner or it may prosecute for failure to obey, the penalty being $20.00 for each day order is violated. **Latrines are allowed only when a sewer is inaccessible. They are condemned upon the installation of a sewer, and in all cases when, in the opinion of the Board of Health, maintenance is injurious to public health.**

A second letter from Mr. Young dated Oct. 11th, states: —Replying further to yours of the 7th inst. would say in our letter of yesterday we used the term "latrine" in a military sense. We have no law prohibiting latrines connected with a sewer. The Building Commissioner informs us that there are to his knowledge but three in the city, none having been installed in the past ten years. While he would have no authority to disapprove the installation he would not advise their use. Should a latrine become a nuisance or be considered injurious to public health it would undoubtedly be condemned by this department.

Frank W. Wright, Health Officer, New Haven, Conn. —We have no ordinance against latrines and would therefore permit them when kept sanitary. In our opinion, however, they should not be used as they cannot be kept clean.

G. A. Jordan, M. D., Assistant Health Commissioner, St. Louis, Mo.—Replying to your letter of October 7th relating to ordinances governing latrines in this city.

No. 1. No.

No. 2. They are permitted without conditions.

I am enclosing you a copy of our ordinance which will show you what regulations are in this city.

An ordinance abolishing privy vaults, school sinks and similar receptacles and regulating the construction and maintenance of water-closets.

Be it ordained by the Municipal Assembly of the City of St. Louis as follows:

Section 1. Water Closets.—Wherever connection with a sewer is possible all privy vaults, school sinks and other similar receptacles used to receive fecal matter, urine or sewage, shall be completely emptied, removed, and the place where they are located, properly filled and disinfected to the satisfaction of the Health Commissioner. No new privy vaults or other similar receptacles shall be constructed on any premises. In place of such abolished privy vaults or other similar receptacles, individual water closets shall be provided. Said water closet appliances shall be of durable non-absorbent material properly sewer connected with individual traps, with properly connected flush tanks provid-

ing an ample flush of water to cleanse the bowl thoroughly, and with suitable provisions to prevent freezing. Every such water closet shall be located in a compartment not less than two feet six inches wide, complete separated from every other closet and such compartment shall be ventilated by means of a window or transom not less than two square feet in area. The floors of such water closet compartment shall be water proof. No woodwork shall enclose the space underneath the seat of water closets. A separate water closet shall be provided for each family or apartment in every existing tenement house, or on the lot on which such tenement house is built. No water closet shall be maintained in any cellar or any tenement house without a special permit from the Health Commissioner.

Section 2. Violation—Penalty.—Any owner, lessee, trustee or agent violating, refusing to comply or resisting the enforcement of any provisions of this ordinance shall be deemed guilty of a misdemeanor and upon conviction thereof shall be fined not less than twenty-five nor more than one hundred dollars; and every day on which there shall be any violation of this ordinance shall constitute a separate offense.

Section 3. Repeal.—All ordinances or parts of ordinances conflicting with any of the provisions of this ordinance are hereby repealed.

Approved July 6, 1909.

No. 3. This city is endeavoring at this time to enact an ordinance providing individual water-closets to the exclusion of all other arrangements in those districts which have sewer facilities. The ordinance enclosed is not being enforced at this time except against vaults which are especially objectionable. The fact that no practical anti-freezing water closet could be found made the strict enforcement of this ordinance practically a confiscation of property inasmuch as many places are so constructed as to not allow the installation of closets in the house.

J. H. G. Beach, Chief Plumbing Inspector, Atlanta, Ga. —We have no direct ordinance against latrines. We would permit their use for cotton mills, saw mills or agricultural works outside of buildings. **We have used latrines in our public schools and other public places and they became a nuisance.**

John C. Hutton, M. D., Health Officer, Board of Health, Harrisburg, Pa.—By rule 44, pan, plunger or hopper-closets will not be permitted in any building. No range closet, either wet or dry, nor an evaporating system of closets, shall be constructed or allowed inside of any building. A separate building, constructed especially for the purpose, must be provided in which such range-closets shall be set. No privy vault, by Rule 61, shall hereafter be constructed in any part of the city where a sewer is at all accessible.

John Fowler, Inspector of Plumbing, Jacksonville, Fla. —1. The plumbing ordinance of this city prohibits the use of any plunger or like type of closet. Under this I have ruled against the installation of any latrine or range-closet. There were several of this type in use in the city and I have succeeded in having them all removed but two. These are in a school and they will be removed during the Christmas vacation. In all cases, individual vitreous bowls were substituted for the above.

2. We will not permit them under any condition.

3. **Personally, I condemn latrines for the large amount of fouling space they have, which the makers do not seem able to abolish. In modern closets this is reduced to a minimum.** In my opinion there is more danger in a great many cases from the outside of a plumbing system than from the inside, as the greater the fouling space the greater the liability of the transmission of diseases by the medium of flies, etc.

David D. Chandler, Health Officer and Secretary, Department of Public Health, Newark, N. J.—Replying to your communication of the 7th instant in relation to our laws governing the use of latrines, would advise that we have granted permission for the use of several latrines, but only in such places as in foundries and tanneries where there is considerable difficulty when individual water-closets are used,—caused by placing obstacles in the toilets which cause a stoppage.

Latrines when installed by permission, are placed on the ground floors and some distance from the workrooms. We do not approve of their use unless as above stated, as we find that they become foul above the water-line unless given much care. We insist on the individual water-closet where it is practical for same to be used.

James B. Clow & Sons, Chicago.—Your letter of the 4th inst. received relative to the latrine closets. Our company is certainly with you in decrying the use of insanitary outfits.

Our salesmen condemn them wherever they can but sometimes school authorities prefer to save a little money by using the latrine, not stopping to think of the health at stake.

We subscribe in their entirety to the opinion's expressed in the accompanying report presented by C. F. Meninger, the Chairman of the Board of Health, Topeka, Kan., in 1904. None of the arguments against latrines has lost its weight since that time. Rather have they increased their force in the light of experience. The chief points are covered in the following paragraphs:

The latrine water-closets established in our public schools are unsanitary on account of the following defects:

1. There is a large exposed soiling surface which is intended to be washed by jets of water from two horizontally placed perforated pipes. These perforations are too far apart and so small that they in a very short time become closed from the sediments in the water. Four-fifths of them are stopped up all the time. This soiling surface is therefore unwashed and there will adhere to it fecal matter and toilet paper which are not washed away by the flush.

2. The fecal matter does not drop into enough water to be submerged. For that reason when the closets are in use, the room is filled with bad odors notwithstanding the fact of the seat ventilation through the stack-heaters.

This mode of seat-ventilation is unsanitary for several reasons.

1. The fire in the stack-heaters cannot be kept uniformly hot enough at all times to maintain a current of sufficient velocity to pull the foul air from the room. At times these heaters may be neglected and the fires allowed to die out. The pulling of the hot air in the cold ducts under floor condenses the moisture and this condensation accumulates and lies in these ducts in direct communication with the room. Under certain conditions of the atmosphere and with certain velocity of wind there are down drafts in these chimneys which drive all foul air back into the room. The running of ventilating pipes into brick flues should not be countenanced as the bricks, lime and plaster will absorb the gas and moisture coming in contact with them. The vents from the traps are run into chimneys and soon become clogged with soot.

3. These latrine closets are further unsanitary in that the nauseous and unwholesome and filthy odors, vapors and gases emanating from the discharges of persons while using the closets will rise and bathe the bodies of and be inhaled by all adjoining persons occupying these closets.

4. They are unsanitary on account of the flushing which is inefficient in quantity, frequency and force. The frequency can be readily improved, so also may the quantity be improved in part, but the force necessary to thoroughly cleanse these troughs cannot be obtained in the manner in which it is applied. The force of the water is dissipated before it reaches even the third stall and hence it is powerless for removal of the fecal deposits the rest of the way in the most sanitary manner. True, it floats down into the hopper, but with such feeble force that much remains adhering to the sides and bottom of the trough. The lack of force in the water also allows a sediment of fecal matter to accumulate in the bottom of the trap at the end of the trough.

I would put my condemnation upon these closets from an esthetical standpoint. It is debasing and degrading to allow fecal accumulations to be deposited and then to float in plain view. This should be deposited into a large body of water and immediately discharged into the sewer.

Every school building having these latrine closets has been visited several times within the past month. The closets and urinals have been thoroughly inspected and examined with and without expert assistance. In every instance the objections enumerated have been observed. In some they were more patent, in others less but never absent. In order to lessen the unhealthfulness of these schools at least in a measure, the janitors have been requested that the sides of the troughs be scrubbed with a broom and hot water every other day, and that the troughs be scoured with commercial muriatic acid once a week, that the pin-hole perforations in the lateral flush pipes be enlarged and kept open, both in the closets and urinals, that the flush tanks be set so as to empty themselves every five minutes or oftener and that larger quantity of water be used.

For the reason above cited I would condemn the system of latrine closets now in use in our public schools. In our high school building the unsanitary conditions are in the superlative degree. In fact, I hold it criminal negligence on the part of the persons in charge to suffer such filthy disease-breeding system of closets and urinals to be and continue to use as is in our high school building. In the rest of our school buildings supplied with latrine closets **the newer and improved type are installed, but they are all unsanitary.**

D. B. Becker, Health Officer, Toledo, O.—I quote from state law recently enacted at Columbus, Ohio:

"Latrine or range water-closets shall be made of cast iron with all interior surfaces white porcelain enameled and all other surfaces coated with non-corrosive paint; or, latrines or range closets may be of vitrous earthenware thoroughly glazed.

"Latrines or ranges shall have flushing rims or other means of adequately flushing the front and rear surfaces constantly or at intervals.

"Latrines or ranges shall be provided with automatic dumping tanks which shall discharge at intervals of not more than ten minutes, and supply to each inside latrine or range not less than ten gallons of water at each discharge. The entire volume of water shall be delivered at once at one end of the latrine or range passing over the entire length of the same and discharging at the other end through the sewer trap. Latrines in school buildings shall be flushed at least every three minutes during recess periods.

"The bottom of latrines or ranges shall have a depression under the center of each seat, that shall retain a body of water at least 1½ inches deep over an area of 6 inches in diameter; gradually diminishing in all directions so that the surface of the water retained shall not be less than 60 square inches.

"There shall be an opening back of each seat of not less than 10 square inches of area, covered by a screen of non-corroding material.

"The local vent duct within 4 feet of the floor line shall be of not less than No. 27 copper, with riveted and soldered joints, shall be graduated in size in proportion to the fixtures added, and shall be installed in such a manner as to be self-draining.

"Where electric current or water pressure is available, local vent ducts shall be connected to a ventilating flue provided with an electric or hydraulic exhaust fan of such capacity or size as to create sufficient draught to carry off all offensive odors. Where electric current or water pressure is not available, ventilating flues with stack heaters shall be provided.

"Covers shall be so attached that all interior surfaces of the latrines or ranges shall be exposed to view.

"No latrine or range shall have more than 8 compartments and each latrine or range shall have a separate trap not less than 6 inches with a 4-inch cleanout which shall be back vented by a 4-inch pipe.

"There shall be an iron top for each latrine or range section (porcelain) coated on the under side and each iron top shall be covered by a square oak seat and lid properly reinforced.

"Wood seats shall be thoroughly painted on the bottom and be varnished throughout; put together with brass hinges, cast iron braces and brackets to make them closed when not held up, and so equipped that they cannot be tampered with and can be easily opened for cleaning.

"Latrines and ranges shall be substantially supported and be graduated for the proper fall towards the outlet."

After all these elaborate rulings concerning latrines, Dr. Becker significantly concludes: **"So far as this city is concerned, I am of the opinion that there are no latrines in use."**

James H. Lynch, Plumbing Inspector, Fall River, Mass.—In answer to your questions contained in your letter of the 7th inst., will reply as follows:

1. No.

2. We do not permit them under any conditions whatsoever.

3. We do not think they are as clean as individual water-closets. We have had them removed from the public and private schools and factories, because they are not properly flushed and cleaned.

Thos. J. Claffy, assistant-chief sanitary inspector, Chicago: To question 1, I reply "yes" and to question 2 "no."

3. Latrines are necessarily dirty—the large fouling surface exposed to the atmosphere and the inadequate flush depending upon the thoughtfulness of the janitor render them unfit for space in any building. Iron exposed to the action of urine in a moist atmosphere soon corrodes. Latrines are made of cast-iron. Did you ever get the smell? The single waste-opening from a latrine is like an enlarged funnel to a sewer, inviting the dumping of cast-off clothing, boots, shoes and rubbish into it. Any stoppage here puts a whole line of seats out of service. The flushing arrangement is of the crudest type, very like what was used hundreds of years ago.

The latrine is an object lesson in insanitary disposal of wastes, and lowers the standard of hygienic habits among those who are forced to use it.

The fact that it is flushed at the will of the janitor,

leaving the defecations exposed to flies in summer-time, the old-fashioned privy. Only under certain factory-conditions are latrines of a special type allowed by us.

F. W. Cloutier, Chief Plumbing Inspector, Minneapolis, Minn.: 1. Our ordinance prohibits the use of the latrine system.

2. We allow them to be used on a new building during construction only.

3. The gathering of soil under persons occupying the same fixture between flushings should be sufficient to condemn their use.

M. T. Stevens, Chief Sanitary Inspector, Seattle, Wash.: 1. We have an ordinance against latrines.

2. We do not permit them. A few of the schools have them (installed some years ago) but they are being rapidly replaced by individual fixtures.

3. We consider that they are insanitary in as much as they become very foul if not given proper attention by the janitor, who will also cut down the water supply to them for economical reasons.

Wm. J. Yackley, Chief Inspector of Plumbing, Dayton, O.: 1. Our ordinance does not permit latrines.

2. We do not permit them under any circumstances.

3. There is too much fouling space.

In this connection, a recent communication from The Wheeling Sanitary Manufacturing Co., Wheeling, W. Va., will be of interest to the reader. In all probability, it embodies in a forceful way, the opinion of most of the manufacturers of sanitary fixtures at the present time.

"Your letter of the 12th inst. received, and we are certainly surprised that there are any architects, contractors or builders that still specify or inquire about the Latrine Closet System.

"It has been probably two years since we had the last request for prices on this article and we flatly turned it down, explaining that we could not see our way clear to furnish such an absolutely unsanitary toiletroom outfit. We recommended the use of individual closets, and explained the many patterns and splendidly working bowls manufactured of a perfectly vitrified body and that are absolutely sanitary. We have sold this concern many carloads of bowls since then and they, as well as ourselves, have forgotten the latrine business.—In conclusion, we wish to say that we will not make Latrines under any circumstances.—Sam P. Alpaugh, Secretary and Treasurer."

In many young cities and towns, now growing toward metropolitan stature, it is to be expected that further attempts will be made to slip one over. We offer this contribution therefore as a help to those who are revising municipal ordinances, that they may include a measure which will prohibit the introduction of latrines in their municipalities. The striking of the first blow is a good start in winning a fight. Public health, officers and plumbers should not be content to remain on the defensive for ever.

Bury the latrine putrefaction in advance by wise anticipatory legislation. Don't wait till the corpse is laid at your front door for disposal.

We will be pleased to assist in any way possible those who have this fight on their hands. You can also aid us by giving us some of your practical experiences with and opinions of this latrine monstrosity.

"THE PLUMBING AND HEATING MAGAZINE."

Every effort to give publicity to the importance of the plumbing and heating industries is beneficial. The trade has suffered in its earliest days from lack of publicity. There can never be too much. We therefore welcome into the field "The Plumbing and Heating Magazine," which is being published monthly as a result of the joint efforts of a number of Philadelphia jobbers of plumbing and heating supplies. This new venture is not meant to compete with any reputable trade-journal, but is intended to foster the interests of the jobbers in the territory covered by the journal, and to bring about a better understanding between jobbers, manufacturers and plumbers. Its Editorial Committee is composed of J. Harvey Borton, of Haines, Jones & Cadbury Co.; E. S. Thompson, of Haynes-Thompson Co., and Walter Walls, of Walls, Owen & Stambach Co. The Publication Committee consists of F. W. Dows, Keystone Supply & Mfg. Co.; F. H. Shuster, Shuster Plumbing Supply Co., and John F. Fleck, Fleck Bros. Co. The Advertising Committee comprises John G. Fleck, Wm. Froelich, of Froelich Bros., and C. J. Rainear, of C. J. Rainear & Co.

The first issue of the new monthly jobbers' publication contains a number of interesting articles by some of the leading men in the trade, and is well worth reading. A copy of the new publication will doubtless be obtained readily by those who apply to the Commerce Publishing Co., 505 Arch St., Philadelphia. Additional attention will be given by mentioning "Domestic Engineering" when you write.

NEW ENGLAND NOTES.

Massachusetts.

Worcester.—M. D. Holmes & Son were the lowest bidders for furnishing and installing a heating plant in the new Meade street school house, proposals for which were recently opened by Mayor Logan. There were six bidders and each was asked to give two sets of figures, one to include the cost of an automatic temperature regulator and the other without. The bids were as follows: M. D. Holmes & Son, $7,926; $7,076. J. W. Callahan & Co., $8,513; $7,696. O. S. Kendall & Son, $8,428; $7,592. Edwin Hawes Co., $8,375; $7,497. A. Burlingame Co., $8,250; $7,372. N. J. Smith, $8,175; $7,365.

Gardner.—H. O. Curtis, who, for some time past has conducted a plumbing establishment with a shop on Chestnut street, has closed out his business and entered the employ of a Boston plumbing supply house as traveling salesman.

Canton.—M. F. Burke has been awarded the contract to install a new hot-water heating plant in the John Curry block on Washington street.

Uxbridge.—Charles A. Anderson has been given the contract to install a hot-water heating plant at the home of Dr. George T. Little.

Lenox.—The contract for plumbing in the new house which is being erected in Lenoxdale for Richard Toole has been placed with John Kirkwood.

Athol.—The school committee has received bids for plumbing in the new elementary schoolhouse to be erected on the corner of Allen street and Park avenue, and the successful bidder will be announced shortly.

HOW IS THE INFILTRATION LOSS FROM A ROOM OR BUILDING DETERMINED?

Editor "Domestic Engineering":—This question was recently asked by one of your readers and the following information may be helpful:

The number of times the air in a room will be changed by leakage or infiltration from without varies with the condition. The best we can do for any certain room is to assume an average value based on the size and location of the room, number of windows or doors and construction of the walls, difference in temperature inside and out, and the direction and velocity of the wind.

Perhaps the most reliable tests have been made by some of the manufacturers of window strips and patent windows, to determine the amount of air leakage with different wind pressures.

These tests have been made to determine the tightness of window construction rather than the leakage through walls or the air change in the room. They were made by blowing air into a room equipped with the special window fixtures, and maintaining the air in the room at pressures to correspond to various wind velocities. As the room was tightly closed, the air blown in necessarily had to escape around the windows and through the walls, and was therefore a measure of the air leakage.

This amount of air per hour divided by the cubic contents of the room, gives the number of times the air in the room will be changed per hour due to leakage, with the wind blowing on the wall at various velocities.

Prof. Hoffman, in his "Handbook for Heating and Ventilating Engineers," says: "The exact amount of air leaving a building by leakage is impossible to determine. Many experiments have been carried on in the last few years to determine the amount of leakage around windows and doors. These in the specific cases have been successful, but no actual values can be quoted for general use. Again, a considerable amount of air passes through the walls, thus rendering the case more complicated. In all the experiments, however, it has been found that these losses have been much greater than was supposed. In rooms not heavily exposed, or in touch with heavy winds, two changes per hour may be safely allowed for all leakage losses."

Referring to the question of heat loss due to radiation through the walls and to air leakage, Prof. Hoffman says: "Much valuable material can be found in the writings of Hood, Wolff, Box, Carpenter, Kinealy, Allen, Hogan, Hubbard and others, but many of the values are only rough approximations at best. The reason for so much uncertainty in this part of the work is found in the fact that there are such great differences in methods of building construction. Conductivity tests for the various materials have been satisfactorily made, but when these same materials have been put into a building wall the quality of the workmanship often permits more heat loss by conveation (or air leakage through the openings in the building) than would be transmitted through the materials themselves."

Prof. Carpenter, in his book on "Heating and Ventilating Buildings," in reference to leakage loss, says: "Data regarding the number of changes of air which take place per hour under different conditions of direct heating in buildings are still very deficient. The following seems to be reliable.

Number of Changes of Air Per Hour.

Residence heating—Halls, 3; sitting rooms, 2; sleeping rooms, 1.

Stores—First floor, 2 to 3; second floor, 1½ to 2.

Churches and public assembly-rooms, ¾ to 2.

Large rooms with small exposure, ½ to 1."

Thus we see that the factors commonly used are, at best, an approximation, based on assumption that conform to average conditions, and made to comply as nearly as practicable to existing experimental data. Like the subject of radiation loss, each case must be studied individually, and a factor selected which, based on past experience and existing conditions, seems to fit the case in hand.

Buffalo, N. Y. Frank L. Busey.

DEVICE WANTED FOR SHARPENING DRILL-BITS.

Editor "Domestic Engineering":—Kindly let us know where we can secure a special device for sharpening drill-bits.

Louisiana, Mo. Caldwell Bros.

We have not on our list at the present time manufacturers of any special apparatus. We assume that you do not wish to use a power-wheel. If any of our readers have a line on some special device of the type you require, we feel sure they will be glad to furnish you with the name and address of the manufacturer after reading your request in these columns.

THE SEWER-TRAP QUESTION ONCE MORE.

Editor "Domestic Engineering":—I had the privilege of reading an article in a recent issue of your journal, signed "Master Plumber, North Tonawanda, N. Y.," in which said writer appears to defend that antiquated abomination called the concealed partition trap. This gentleman, if he really be a plumber and master plumber, as he terms himself, had better learn his trade over again, as I had the honor to listen to some New York apprentice boys poking fun at his knowledge of *sanitary plumbing*; one of the remarks made by them was to the effect that "he should wake up and get abreast of the times."

Mr. Luff knew perfectly well what he was talking about when he presented his up-to-date views, and what he said against concealed seals in traps, was the result of years of patient study. I doubt very much if he ever thought that there would be any one so far behind the times as to champion the cause of the concealed partition or concealed seal trap, or one who would even think that any *sanitary* or even an ordinary plumber would think of mentioning that any first-class mechanic would be so careless as to install a drum trap with a defective cover or a cover that was not properly adjusted gas-tight. I have wondered since reading the article whether any one paid the said "Master Plumber" for writing the article, as manufacturers of traps with concealed partitions have left no stone unturned to market their

product. I have also wondered whether the said "Master Plumber" was a manufacturer of concealed partition traps, as he seemed afraid to give his name.

The said "Master Plumber," as he terms himself, also refers to Hollis Godfrey's article on "Sewer-Gas and Disease," also Prof. Winslow's opinion on sewer-air; I cannot see where either of these gentlemen gives him any excuse for using their names in favor of traps with concealed partitions or seals and I doubt very much if Hollis Godfrey would recommend a trap with a concealed partition, and I am almost positive that Prof. Winslow (whom I know personally) would never once think of recommending such an article as the concealed-seal trap.

What is the use of putting any trap in at all, if you are going to use a makeshift like this, as I have taken out lots of said concealed seal traps that were defective and many of them had beyond a shadow of doubt always been defective.

The said "Master Plumber" also refers to the purity of sewer-air. In relation to this I will say that the absence of microbes is due to the moisture in said sewer-air, as the moisture catches the bacteria and they settle into the sewage. I will also admit that the air in *well ventilated* sewers is not fatal to human life, but even this air is not healthful for a human being to breathe for 24 hours per day and for days in succession or continually, but the air in *unventilated* sewers and cesspools is fatal to human life and has been proven so time and again. No more striking case than the recent one at Corona Heights, New York City, can be found, where four men were killed instantly by the fumes from a cesspool which had been opened for cleaning, an account of which appeared in the "Daily Star," Long Island City, New York, N. Y., April 15, 1911. As this is a very recent case I mention it rather than numerous others of which I have knowledge.

The facts of the case are as follows:—Vito Dallaza, 56 years of age, of 56 Floyd St., the owner of this two-family dwelling, attempted to give the cesspool, located at the sidewalk, its annual cleaning; the cesspool was 18 ft. deep and nearly full of sewage. Dallaza and his son, Peter, 18 years of age, were assisted in the cleaning job by Lado Arcencello, 27 years of age, living on the premises, and Macafari Kuse, 33 years of age, of 141 Mott St., Borough of Manhattan, New York City.

When the top of the cesspool was lifted off, the outrush of sewer-gas was almost overpowering. The men waited some minutes until they thought all of the gas had escaped. Then Peter, the son, started to put a section of hose into the cesspool to pump the contents out. While he was bending over the opening he was overcome by the gas and fell in. The power of the fumes can be imagined, when it is learned that Peter was rendered unconscious so quickly that he did not even have time to utter a cry of warning. He seemed to go off into a faint and without a murmur, gently toppled over. One of his hands struck the side of the opening and he could probably have saved himself had he been only partly conscious. When Vito Dallaza saw his son fall into the cesspool, he gave a yell and threw himself to the ground and looked over the edge of the cesspool. If he had remained prostrate he would not have tumbled in after his son, even though rendered senseless, but he pulled himself to his knees, became unconscious and also fell into the cesspool.

The lack of precaution or forethought, on the part of the other two men in going to the rescue of the father and son, was suicidal. But they were so excited and eager to get the Dallazas out of the cesspool that they failed to consider the deadly potency of the fumes and the risk they were taking. They, too, were made helpless by the gas while trying to lower a rope into the cesspool, and both fell in at nearly the same moment. Dr. David-on, of the Flushing Hospital, was telephoned for immediately, as were also the police and fire departments, and the bodies were finally recovered, after much difficulty, and exercise of great precautions. When Dr. Davidson examined the bodies, he stated that the victims were practically dead before they struck the sewage in the cesspool.

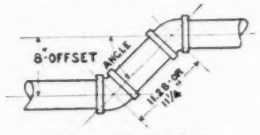
C. Christian Soßeiss, Sanitary Engineer.
Richmond Hill, N. Y.

THE MEASURING OF 45-DEG. ELLS.

Recently we received an inquiry from a subscriber in Springfield, asking for the best method of measuring 45-deg. ells. Kroeschell Bros. Co., Chicago, suggests that

Offset Measurements.

45 deg. Offset C to C of Fittings



Center of standard screwed 45 deg. Fittings

EXAMPLE

8 inch Offset on 45 deg. Angle
1.41 x 8 = 11.28 (or 11¼ C to C)

To find length of pipe between fittings, take off centers of degree fittings and allow for threads.

FACTORS

60 deg. or	1/6	Bend . .	1.15
45 " "	1/8	" . .	1.41
30 " "	1/12	" . .	2.00
22½ " "	1/16	" . .	2.61
11¼ " "	1/32	" . .	5.12
5⅝ " "	1/64	" . .	10.22

Offset	Angle
1	1½
1½	2⅛
2	2¼
2½	3½
3	4¼
3½	5
4	5⅝
4½	6⅜
5	7
5½	7¾
6	8½
6½	9
7	9⅞
7½	10½
8	11¼
8½	12
9	12¾
9½	13⅜
10	14
10½	14¾
11	15½
11½	16¼
12	17

Size Pipe	Center of 45° Fittings
¼	¾
⅜	13/16
½	⅞
¾	1
1	1⅛
1¼	1¼
1½	1½
2	1¾
2½	2
3	2¼
3½	2⅜
4	2⅝
4½	2¾
5	3
6	3½
7	3⅞
8	4¼
9	4¾
10	5¼
12	6

HAS NO EQUAL for Gripping Pipe and Pipe Fittings of Every Description

one of its "Ideal" chain wrench cards would about fit the bill, and we offer a reproduction of it here to those who are interested in the matter. Special copies of this card can be obtained by application to the company.

CONTRACTS AWARDED.

Lansing, Mich.—Shields & Leadley have recently secured the following contracts: Plumbing and heating the E. W. Sparrow Hospital building, $20,000; plumbing and heating the new building at the Michigan School for the Blind, and remodeling its power-plant and underground piping system, $13,000; heating new hotel at Carson City, Mich., $1,200; plumbing and heating City-hall at Hillsdale, Mich., $3,167; plumbing and heating addition to the school building at Ithaca, Mich., $2,500; plumbing the Ingham county poor-house, $2,000; and heating the C. M. Brown business block at Ithaca, Mich., $1,000. The firm also has a number of smaller jobs in the city and throughout the state.

The Boss Talks to His New Foreman About Heating

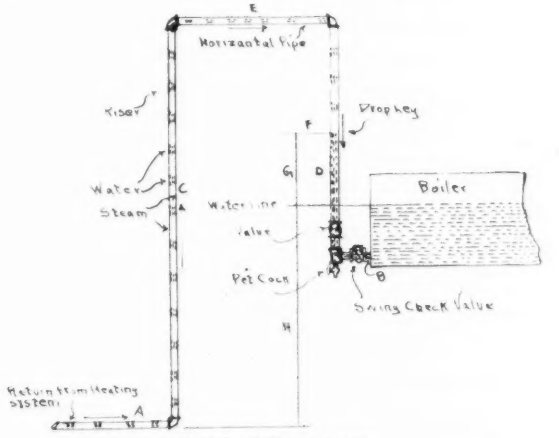
Written by T. Twice

VI.

You were asking about the steam-loop the other night, John, and I do not know of a better time than right now to explain it to you.

The steam-loop is an arrangement of ordinary pipe and fittings, as shown herewith, without any valves, floats, or other mechanical device, and intended to return the water of condensation to the boiler from below the water-line of the boiler. It will raise water to quite a distance, and is effective on either high or low-pressure work.

The loop consists of a riser C and a drop-leg D, which are connected by a horizontal pipe E. The riser is connected at the bottom with the return-end of the heating system, or other source from which the condensation is to be taken, so that all of the condensation will go directly into the riser C. The drop-leg is connected to the boiler below the water-line by the pipe B. When the system is in use, it becomes filled with bubbles of steam, S, and slugs of water, W, and these travel up the riser C, and along the horizontal pipe E, finally dropping into the drop-leg D, steadily. The steam-bubbles constantly losing their heat and contracting, is the cause of this move-



Sketch of Steam Loop.

ment, and they finally condense in pipe E and drop into drop-leg D. The pressure in the heating system steadily forces the contents of the riser C upwards and fills the space made by condensation, and this upward movement goes steadily on as long as there is any condensation. The water which is carried up to pipe E, with that which is formed by condensation, will run by gravity into the drop-leg, where it will form a water-line F, above the water-line in the boiler.

The pressure due to the head of water between the water-line in the boiler and the water-line in the drop-leg, plus the steam-pressure already in the system, becomes greater than the pressure in the boiler, and the water in the drop-leg will then run into the boiler. This is a very simple arrangement, John, when you look at it right. You can try it out on the shop heating-system some night if you want to. You will be surprised what you can do with "crazy water" when you get to understand it.

But to get back to the loop. As only a portion of the contents of the riser consists of water, the riser can be carried very high, and is practically only limited to the height at which the weight of its contents will balance the steam-pressure in the heating system or other source from which the condensation is taken, at the foot of the riser. The water will back up in the drop-leg until it balances the difference between the pressure in the boiler and in the return-pipe from the heating system which connects to the riser, plus the weight of the contents of the riser. The actual lift H will be the difference between the return-pipe of the heating-system and the water-line in the boiler.

The condensation should not take place in the riser, but only in the horizontal pipe and in the drop-leg. The horizontal pipe serves as a condenser, and may be long or short, to suit local conditions. It may be necessary to cover the riser where it is exposed to cooling influences, but the horizontal pipe need only to be protected from freezing. The riser and pipe A should not be larger than 1¼ in. nor less than ¾-in., as in larger pipes the water plugs become an uncertain quantity. Two or more risers may be used where the condensation becomes too much for one pipe to handle. Pipes E and D may be made as large as required. A drain-cock, valve, and a light seat-swinging check-valve should be used at the boiler as shown on sketch.

You can figure out the dimensions of a steam-loop as follows:

It might be well to say right here, that when you speak of absolute steam pressure you are speaking of the gage-pressure plus 14.7 lb. We had better put this in the form of a question to make it clearer.

Question—The steam-pressure in the boiler is 30 lb. absolute, and the pressure at the end of the heating-system is 20 lb. absolute. The proportion of steam to water in the riser is 3 to 1. How high may the water-line in the boiler be above the return of the heating-system?

Consider the weight of a column of water 2.3 ft. high as one pound.

Solution—The pressure at the foot of the riser will balance a column of water (20×2.3 =) 46 ft. high. The contents of the riser being one part water and three parts steam, the column may be 4 times that height, or (46×4 =) 184 ft. high. The pressure in the boiler will support a column of water in the drop-leg (30×2.3 =) 69 ft. high. If the condensation in the horizontal pipe would be perfect, the highest lift would be (184—69 =) 115 ft., answer.

Take it another way.

Question—How high must the riser extend above the water-line in the boiler to lift the condensation 21 ft., the difference between the boiler-pressure and the pressure at the foot of the riser being 7 lb. per sq. in. and the proportions of steam to water being 3 to 1.

Solution—On the supposition that the loop is full of steam, the water will rise in the drop-leg (7×2.3 =) 16.1 ft., to balance the difference in pressure. Adding this height to the required lift, the column of water will stand (16.1 + 21 =) 37.1 ft. above the foot of the riser when the pressures are balanced. If the riser is filled with water and steam in the proportions of 1 to 3, the water-column must be lengthened to balance it, the length required being equal to the water contained in the riser. The contents being 1 part water and 3 parts steam, it follows that ¼ of the total height will be above the present height of the water-column, and ¾ below it. The added height will be (37.1 ÷ 3 =) 12.4 ft. Adding this to the present height of the water column, that final height above the

boiler water-level will be (37.1 + 12.4 — 21 =) 28.5 ft., answer.

In case there should be an increase in the difference in pressures between the boiler-pressure and the pressure at the foot of the riser, it might be well to add 5 ft. to the height of the loop. You will find this useful, John, where you do not desire to waste the condensation from radiation below the boiler water-line. Well, let's call it a day, and close up.

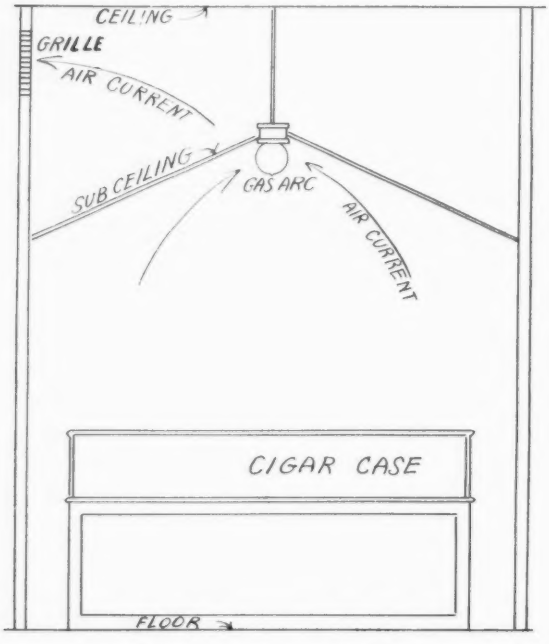
(To be Continued.)

TWO RECENT EXPERIMENTS IN VENTILATION.

By Albert Scheible.

Using a Gas Lamp as a Ventilator.

One of the novel features of the new 21-story Peoples Gas Building in Chicago is the method used for ventilating the cigar-store located on the main floor at the junction of two corridors. The absence of all windows would make this a difficult room to ventilate for any purpose, and the almost continual presence of cigar smoke made the problem even more serious. But the same absence of windows also demanded the steady use of artificial light, hence the architects and engineers were able to solve the joint problem with a single stroke. Instead of planning



Using a Gas Lamp as a Ventilator.

separate means of lighting and ventilating, they placed a single gas mantle cluster (or so-called "gas arc") over the center of the room. Then they built a sub-ceiling sloping up from all four sides of the room to this lamp, like an inverted funnel. The height of the first story in this modern building enabled them to provided such a secondary ceiling without spoiling the proportions of the room, which in fact is improved in appearance by the same.

Burning all day, the gas-arc not only draws up the air needed for its own consumption, but the heat radiated by it also keeps up a strong upward current which continually draws air out of the cigar-store into the space between the two ceilings, out of which it exhausts through a special grille. The ventilation thus obtained has been a general surprise and the same method should prove useful in other places where artificial light is needed all day long and where the height of the room permits of placing a funnel-shaped secondary ceiling under it.

A Case of Dangerous Ventilation.

That a carefully installed and steadily rotating exhaust-fan may prove a source of danger when used in the same room with a gas-stove, was shown by a recent occurrence in Germany which came very near having a fatal outcome. It happened at the club-room of a restaurant, a room about 18 ft. square with a door at one side and two windows at the opposite side. A gas-stove with a front about 36 in. wide was on the same side with the door, while between the windows an electrically-driven 12-in. exhaust-fan had been mounted in the wall.

Having finished their luncheon and the usual smoke which follows the same, several of the regular patrons had retired from the restaurant proper into this adjoining room in which they were accustomed to stretching out for an after-meal nap. Owing to a sudden chilly spell, the doors and windows had been closed and the gas-stove had already been burning for several hours. This stove was connected to a flue through about 7 ft. of piping and its warmth was not uncomfortable. However, the cigar smoke made the air stuffy, so the fan was started up just as the guests stretched out for their nap. The manager had promised to turn off the fan in about five minutes but never thought of it again until a half-hour later when he went to wake his patrons. Then he was surprised to find the fan still running and the room full of escaping gas. After some hot words between his guests, who thought him negligent, and the manager, who accused them of having tampered with the stove, it was found that no one had touched the stove. Indeed, the guests had all been soundly asleep and only knew that they had somehow acquired headaches during their nap.

A careful study of the situation brought out the explanation. With both the door and the windows closed, the exhaust-fan had created so strong a suction as to draw the spent air and combustion products out into the room, instead of letting them pass up the chimney. Then the stove in turn had drawn from this partly-spent air for its supply, and after a time this air-supply had grown too shy of oxygen to maintain the combustion of the gas. Consequently, the flames had gone out and the gas itself was being drawn into the room by the ventilator. A deliberate repetition of the conditions proved that the suction of the fan was amply strong enough to draw the exhaust out of the gas-stove and to impoverish the air to the point where it would no longer support the flame. Fortunately, the manager of the place had entered in time to let his patrons off with mere headaches, but the episode shows how important it is to provide proper inlets for fresh-air when using an exhaust-fan in a room in which a gas-stove is burning, and particularly so if the room is a comparatively small one.

LANSING, MICH., NOW HAS A PLUMBING INSPECTOR.

Lansing, Mich., has decided that all plumbing must hereafter be done in accordance with the state law and the plumbing ordinance adopted by the city council, and F. H. Dougherty, formerly for six years a master plumber in that city, has been appointed plumbing inspector.

THE JOURNEYMAN AND HIS HELPER

JOIN HANDS FOR BETTER WORK

THE JOURNEYMAN MAY ALSO BECOME A "SPECIALIST."

Editor "Domestic Engineering":—Many times when we think of a "specialist" we have in mind some wise guy who has some swell rooms on the most exclusive boulevard and who does not hesitate to relieve you of your "hard earned" at the time you may require his services.

Did it ever occur to you that there was a chance for specialists in the ranks of the plumbers and fitters? Likewise that any one of you who choose could, in time, qualify for the place?

What's the matter with becoming an A-No. 1 "rougher-in"? So good, in fact, that you would make the ordinary plumber look like 30 cents every time that he ran up against you? Is there a chance for such men? Go to most any master plumber and see. Say, if all the money could be collected into one jack-pot for all the mistakes that are made in even one season in the roughing-in of jobs in this land, it would help out a lot in the business who are "financially embarrassed." Most any ordinary plumber can attach the fixtures after all the planning has been done and the pipes laid where they ought to go (but don't materialize many times).

Why shouldn't a fellow become a "specialist" on setting steam or hot-water boilers? The argument "that any first-class plumber or fitter ought to be such a specialist" don't go. Boilers have leaked, more or less, for years. Pipes and drains for the various fixtures have to be "sprung" or twisted to get them to come where they should, simply on account of incorrect "roughing-in." It has been and will so continue until we get a class of specialists at the game, or else may be some one will come along some day with a patent self-installing plumbing apparatus. Then the journeyman's cake will be dough indeed.

Josiah Crabtree.

"H. C." BOBS UP AGAIN.

Editor "Domestic Engineering":—It seems that the inquiries and suggestions I made in the issue of July 15th have stirred up quite a mess. I have been jumped upon from all directions; told that I did not know how to express myself; that I favored the mail-order houses; that my suggestion had been tried—and failed; and many other things too numerous to put down here. The hit bird flutters. Here goes for some more. I have had our town editor go over this, so that some of the superfine feelings of the more erudite master plumbers might not be assassinated again.

I quoted the mail-order houses as an example of selling on a cash basis to show that it had been done, is now continuing to be, and promises to lope along in the same fashion for some time to come. One reason why the mail-order houses can do this is, they have the cash in hand to back up their game. Most plumbers have not. Money talks, and it was my desire to bring out some data which might show some better method of handling the business. If the jobber is in the way, put him out. I proposed some cash deals between the manufacturers and the plumber, direct. May be they would not go and then again perhaps they would—if once started. A failure once or twice, or even several times, does not signify, when the main bunch is pulling in the opposite direction. When I spoke of cash, I did not know how near to the hearts of some in the trade I was approaching until I read the letters from the booklet by Frank S. Hanley in relation to the 10 per cent credit system, from which it appears that money talks after all and that the jobber is trying to secure a firmer seat on a throne already tottering. The master plumbers are too mealy-mouthed to run their own affairs. The jobber must needs show them how. The journeymen also take a whack now and then and let us hope that, after a few more years of wisdom-getting, the master plumbers will pluck up enough spirit to gather a few ideas of their own which they will actually put into practice for their own good.

"H. C."

TIPS ON CLEANLINESS.

Editor "Domestic Engineering":—The word plumber should stand for all that is clean and sanitary, but many times it represents the very opposite. One point in particular that comes to my mind is the appearance of the hands of the plumber or fitter. Now I am not poking fun or sneering at hands calloused or blackened by honest toil, for my own have been in such a state many times. After allowing my hands to get into such a condition that I tied them into a knot behind my back whenever I met my best girl, the same hands being gritted full of the many kinds of dirt that come in the way of plumberkind, I began a series of experiments to see if it was necessary for the plumber to possess the paws of a Digger Indian. I found, after various trials, that it was not and while I am not inclined to favor white faces, white hands or white livers, I do believe that it is to the interest of the mechanic to be clean, at least, and further more I know that it can be done if he will take a little pains.

Take it in the matter of overalls, for instance. What is more disgusting than to see a plumber, fitter or helper go into an elegant parlor to pack a radiator-valve or bronze the radiator wearing a pair of overalls that are so full of grease and dirt that they would make a good suit of plate armor? You have done this, and so have I, until I got the right idea and that is, have several suits of over-clothes and have them cleaned properly. A mere washing in water and suds will not clean the overalls of the average mechanic. The clothes should be first well soaked in kerosene. This will loosen the dirt and cut the grease and gum and when the elbow-grease is applied afterward, the clothes will come through somewhat faded perhaps, but clean. Taking the average run of daily work, and busy six days in succession, two suits of overalls per week are not too many to keep one's appearance clean and wholesome. Some shops require this and others may, if they ever wake up.

If the odor of kerosene is objectionable, gasoline may

be used for the purpose instead. Getting back to the appearance of one's "mitts," there is no excuse for dirty, grimy, chapped hands, provided a little care be used. Go at it in this manner. After the day's work is done and the tools wiped up and placed in the chest, roll up the sleeves and pour some of the lard-oil on the hands. Wash them well in the oil and then wipe them dry on some waste, or lacking the waste, use a piece of cloth. The hands can be dried sufficiently to go home without the application of soap and water, if necessary. The use of cold water and tar soap will badly chap some hands, while others do not seem to mind it in the least. Find out the kind of soap that will agree with your face and hands and make it a point to have a cake of it in the chest. It will not cost much and will do a lot of good. When you arrive home, complete the washing process and do not think it at all effeminate to use either some cold cream or vaseline on the hands, rubbing the mixture well in. Following this treatment, you will soon possess a pair of hands that will have the natural color. When you climb into the barber's chair he applies all manner of creams and lotions to your face, does he not? You do not think it is dudish either, so why should you kick on making yourself presentable? One time as I climbed out of a ditch, my hands were covered with mortar and on washing them they were all wrinkled up, fairly making the enamel creep on my teeth. The lady of the house happened to come to the door and observed my predicament. She went into the pantry and came back with the vinegar jug, some of which she poured upon my hands. It gave relief almost instantly. Another time, as I was crawling under a house, I felt a sharp sting on my face. A spider had bit me, and my face soon puffed up mightily on the starboard side and hurt like thunder. I "wormed" out of the hole and went down to a drug-store. The man behind the counter applied some ammonia to the bite and I was soon as happy as any White Sox fan over the final game.

Chicago. H. C.

THE GAS-METER.*

Vest-Pocket Essay by George Fitch.

The gas-meter is to mechanism what Baron Munchausen is to literature. It is inaccuracy protected by a patent. It is also the nearest approach to perpetual motion yet discovered. Leave a gas-meter absolutely alone in a deserted house for months at a time and it will work quietly but faithfully without stopping even for meals.

The gas-meter is used by gas companies to prove that the consumer has been burning his lights all night and has been sending up balloons from the roof. It is a small box with face and hands like a clock. Here the resemblance stops, however. You cannot turn the meter back and it does not run down. It does you no good to neglect the gas-meter. It keeps on going anyway. The man who will patent an attachment which will enable a man to stop his gas-meter by forgetting to wind it will earn the gratitude of all mankind.

The gas-meter brings light to the home, lightness to the pocketbook and aviation to the temper. Like the Bible, it is always causing trouble by being read from different standpoints. The only difference between a theological conference and the office of a gas company on the first of the month is the fact that the language used in the conference is used backward in the gas office. A man may be able to read Greek, Latin and Sanskrit at sight, but he will find for all that that he can't read as much gas out of his meter by several hundred feet as the man in overalls who gets into the house through the sill-cock on unknown occasions and reads the dials in the dark. Only men of romantic and imaginative dispositions are successes in the meter-reading business.

Meters are very strongly made and it is almost impossible to bias their judgment even with an ax. The confidence of a gas company in its meters is one of the most touching examples of perfect faith in the world. If a gas-meter reports the use of 11,000 feet of gas while the family has been in Europe, the president of the gas company will not only accept its statement without question, but he will endeavor to place it in the home of some other family which is going to Europe. More than one gas

"The Gas-Meter Brings Light to the Home, Lightness to the Pocketbook and Aviation to the Temper."

magnate has had serious doubts about the truthfulness of George Washington, but he never doubts a meter until it fails to register anything. Then it is brought in to be repaired.

Gas-meters have much influence on American families. They have made more people go to bed early than all the teachers of all the ages. They have broken up more courtships than any other one thing. They also exercise a discriminating influence over literature. It takes a good story indeed to hold a man's attention late at night, while in the cellar below the gas-meter is steadily clicking its way toward a record-breaking gas bill.

Altared and Altered.

At the altar: "I thee with all my worldly goods endow." Two years later: "More money? Where's the dollar I gave you last week?"

A Lipton Yarn.

Sir Thomas Lipton at a dinner in Chicago praised America's bigness.

"I once heard," he said, "a Dakotan talk about the big farms they have out there.

"'We have some sizable farms,' he said, thoughtfully. 'Yes, sir; pretty sizable. I've seen a man on one of our big farms start out in the spring and plow a straight furrow till fall. Then he turned around and harvested back.'

"'Wonderful,' said I.

"'On our Dakota farms,' he went on, 'It's the usual thing to send young married couples out to milk the cows. Their children bring home the milk.'

"'Wonderful,' I repeated.

"'Once,' he said, 'I saw a Dakota farmer's family prostrated with grief. The women were weeping, the dogs were barking, the children were squalling, and the tears streamed down the man's face as he got into his twenty-mule team and drove off.'

"'Where was he going?' said I.

"'He was going half way across the farm to feed the pigs,' said the Dakotan.

"'Did he ever get back?' I asked.

"'It ain't time for him yet,' was the reply."

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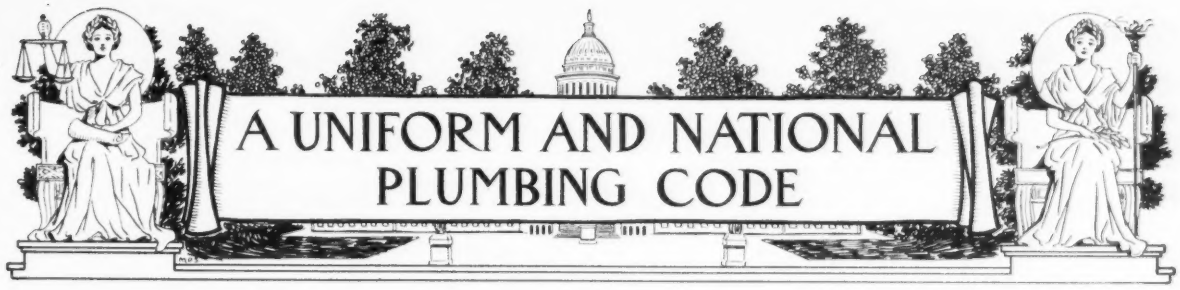

A UNIFORM AND NATIONAL PLUMBING CODE

By Henry D. McCormack, C. E.

XVIII.

VENTS AND REVENTS.

The subject of vents is an important one for any code commission to consider, and the provisions covering the venting of drainage systems must be broad enough to cover any and all conditions which arise in any class of buildings, from cottage to skyscraper. The venting of the plumbing system for a cottage is a simple matter indeed. Here if the work is properly planned beforehand, every fixture trap can be effectively vented, without a revent or back-vent being used on the premises. In other cases judicious planning, and the use of a few non-siphon traps, will fill the bill. When we come to the skyscraper, on the other hand, it is poor economy and poorer sanitation to try to dispense with vent-stacks and vent-pipes, or to make the pipes too small. Further, in all tall buildings, it will be found a wise provision to require the vent-stack and the accompanying soil-stack to be connected together every few floors, with branches the full size of the vent-stack, to serve as relief pipes for the escape of the air compressed by a downward rush of water, and not force the air clear down to the foot of the stack. This is a case of a short circuit of air being infinitely better than a long circuit.

In the tall building, likewise, the vent-stacks had better extend separately and independently through the roof, while in the smaller types of buildings there is no objection to the vent-stacks being connected to the accompanying soil-stacks well above the highest fixture.

Next to the number of vent-stacks and their size, the way they are run should come in for consideration. As most of the vent-pipes run in horizontal positions are of wrought-iron or steel, they are liable to deterioration more than cast-iron, lead or brass would be, particularly on the inside where exposed to the warm, moist, gas-laden air from the sewer. This warm air, when exposed to a slightly lower temperature, will part with some of its moisture, which upon condensing would form little pools of water very destructive to the piping if allowed to accumulate. To prevent the formation of pools of water in the vent-pipes, they should be run at a sufficient pitch so that all moisture will drain into the soil-stack or some of its branches. So long as the pipe has sufficient pitch to rid itself of water, no greater pitch is necessary, although a 45-deg. pitch is not objectionable outside of the greater cost of installation. There is nothing of a solid nature to deposit in and clog the horizontal vent-pipes to a battery of fixtures. Any rust-scales or other matter introduced at the mouth of the stack above the roof would fall of its own weight to the house-drain, and could not by any possibility get into a right-angle fitting. There would be far greater danger of getting into a 45-deg. fitting. In the horizontal pipe itself, scales enough cannot flake off to do any harm. If the entire metal forming the wall of the pipe were to turn into rust-scales, there would not be enough to fill the pipe more than a quarter or third full.

Long horizontal runs are to be avoided, however, because it is better to use that horizontal pipe in a vertical direction reaching towards a point above the roof, where it can open to the atmosphere, than to run it horizontally and connect it to another vent-pipe or stack. When, however, it is necessary for structural reasons so to run a vent-pipe, it can be done by making the pipe large enough to compensate for the friction due to its length. The material for vent-stacks is going to become a problem in future work. In the planning of a skyscraper, 20, 30 or more stories in height, it is vitally important to use material which will not deteriorate rapidly or become worn out in the course of 12 or 15 years. If it should prove in time to come that the plumbing system has to be renewed periodically because the moist warm air from the sewer destroys the pipe, it will lead to less plumbing in the buildings, or a better material will have to be substituted. Perhaps it will come to pass that some method will be devised whereby iron and steel pipes, the cheapest and most extensively used kinds at present, can be treated inexpensively so they will resist the ravages of time. The combining of a certain percentage of nickel or some other metal or alloy, might give us a better quality of pipe at slightly greater cost. As the matter now stands, wrought pipe is the accepted material for vent-pipes, and we should see to it that only galvanized pipe is used. It is true that black iron pipe is used for steam systems, which in some cases are very destructive to iron, yet it stands the wear very well. For seven months of the year, however, the steam-pipes are both empty and dry, and no perceptible corrosion then takes place; while during the time the system is fired up, the pipes exposed to the live steam are not corroded nearly so much as those which carry the water of condensation.

At all events, galvanizing protects the pipe and prolongs its life when used in the drainage-system, and as the best is none too good, it would seem like a reasonable requirement to insist on the use of galvanized pipe wherever wrought pipe is used, throughout the drainage-system.

In determining the size of vent-stacks that will be required, the pipes should be proportioned to the volume of air they must supply, at a certain velocity, all of which would be influenced by the length of the vent-stack and height of building.

Unfortunately no code yet compiled takes up the subject in this thorough manner. The New York Code, for instance, calls for only two sizes of soil-stacks:

Main soil-pipes .....4 inches
Main soil-pipes for water-closets on five or more floors .....5 inches

It says nothing about the number of fixtures or volume of water which can discharge into the stacks. In the

table of sizes of vent-stacks, it gives a greater variety of sizes for the different number of floors, but the sizes are guess-work, pure and simple, as can be seen by comparing them with the soil-pipe sizes. Bear in mind that so far as the code provides, a 5-in. pipe is sufficient for five or more floors, and, as buildings in New York City are all of 40 stories high, the 5-in. pipe must be considered as complying with the code in all buildings from 5 to 40 stories in height and regardless of the number of closets discharging into it.

In the matter of vent-stacks, however, the code is more particular. Tabulated, the sizes of vent-stacks and the corresponding sizes of soil-pipe called for are as follows:

Number of Stories in Height	Size of Soil-Stack in Inches	Diameter of Vent-Stack in Inches
1 to 4	4	3
5 to 8	5	3
9 to 16	5	4
17 to 22	5	5
23 and over	5	6

It will be seen that as the number of stories increases, and the presumed number of fixtures increases in like proportion, the size of the vent-stacks is enlarged, while the size of the soil-stacks remains constant, until the point is reached where the vent-stack is larger than the soil-stack.

Such work is sloppy! New York City never had a real good plumbing code, and never will have until it revises its methods and puts the matter in the hands of a broad-gage man to work out.

Minneapolis is more definite in its provisions, proportioning the size of the vent-pipes and stacks to the number of fixtures they are to serve, with an allowance for height or distance. The Minneapolis vent provisions can be tabulated as follows:

Size of Back-Vents.

Back vents for fixtures with traps 2 in. or less in diameter.

Diameter of pipe	Number of fixtures allowed	Maximum length allowed	After maximum allowed length is reached, increase in size every
1¼ in.	1	30 ft.	20 ft.
1½ in.	3	35 ft.	20 ft.
2 in.	6	40 ft.	20 ft.
2½ in.	8	40 ft.	20 ft.
3 in.	30	40 ft.	20 ft.
4 in.	50	40 ft.	20 ft.

Back vents for water-closets and for fixtures having traps larger than 2 in. in diameter.

Diameter of pipe	Number of fixtures allowed	Maximum length allowed	After maximum allowed length is reached, increase in size every
2 in.	3	30 ft.	40 ft.
2½ in.	8	40 ft.	40 ft.
3 in.	15	40 ft.	40 ft.
4 in.	25	40 ft.	40 ft.

Here, then, is a step in the right direction. It takes into consideration the height of building, number of fixtures of various sizes and waste-pipes connected to the vent-stacks; then makes provisions for measuring the size of pipe for each and every 20 ft. over and above the maximum allowed. The principle is right, but the method is wrong. Radically wrong. Just look at it in the light of the following example:

Assume a building 400 ft. high, in which there are 25 water-closets connected to the stack. According to the Minneapolis Code, a 4-in. pipe will be large enough for the maximum length allowed of 40 ft. But there are 360 ft. more which the vent-stack must pass through before it reaches the roof, and for each 20 ft. of this distance the stack must be increased one size in diameter. Twenty goes in 360 18 times, so that it will require a vent-stack 18 sizes larger than 4-in pipe to fill the requirement. A 20-in. pipe is just 18 sizes larger than a 4-in. pipe, and according to the table of sizes, a 20-in. pipe would have to be used.

That a 20-in. pipe is a ridiculous size it does not take a plumber to realize. A carpenter, a mason, even a hod-carrier, would laugh at the plumber who tried to comply with the requirements of that code. It does not take brains or judgment to see that the size is out of the question, should never have been adopted, and cannot be applied in practice, and therefore the proportions are wrong although the idea is right.

Such errors should not creep into the provisions of a plumbing code, for they make us all ridiculous. For 20 years or more we have been preaching the doctrine of plumbing laws; and if the general public knew a minute what a roaring farce most of them are, it would quickly put a stop to further legislation on the subject. It would seem that out of the entire United States there ought to be at least one city where an almost perfect code could be compiled. The city that starts such a move will have the supreme satisfaction of seeing every other city in the Union look up to it in sanitary matters as a model of perfection. Such a prize would seem worth working for, so why not get together, both journeymen and master plumbers, in an effort to bring together in the near future two or three authorities who have made a life study of plumbing, to help the cause of plumbing by laying the foundation for a code that can become uniform and national!

San Francisco is modest. Modest in the extreme! It does not aspire to lofty buildings or congested quarters, so in the code it has limited the provisions to 9 or more closets or 6 or more other fixtures in a building. The provisions follow:

Sizes of Vents and Fixtures Allowed.

1 to 3 water-closets or 7 small fixtures into a 2-in. vent.

1 to 5 water-closets or 10 small fixtures into a 2½-in. vent.

6 to 8 water-closets or 16 small fixtures into a 3-in. vent.

9 or more water-closets or 16 or more fixtures into a 4-in. vent.

New Orleans sort of side-steps the vent-stack size problem, and dismisses the subject with the following paragraph:

"Two closets may be vented into a 2-in. branch; five water-closets may be vented into a 3-in. branch vent; eight baths, basins or similar fixtures may be vented by a 2-in. vertical pipe; 12 closets by a 4-in. vertical pipe. Two 1½-in. traps may be vented by a 1½-in. pipe, and vent must not exceed 15 ft., and when fixture is not over 8 ft. from the main vent. When in excess of the above, vent-pipes must be increased in size through roof, or enter main stack one foot above the highest fixture."

Comprehensive, is it not, for the architect, owner or plumber who is told there is a plumbing code to guide him in the planning of his work, and wants to find what size of vent-stack to specify for a 30-story building, having 12 closets and several other fixtures dscharging into each stack, at each floor of the building! Yet, such is what we have to work to in almost every city in the country which boasts of a plumbing code.

Proof.

"Sir," said the astonished landlady to a traveler who had sent his cup forward for the seventh time, "you must be very fond of coffee."

"Yes, madam, I am," he replied, "or I should never have drunk so much water to get a little."—Elmwood Courier.

"Domestic Engineering" Carton on "Pons Asinorum"—No. LIII.

A PLUMBER SELLS
MATERIALS ..... # 10 00
LABOR 4 00
ADDS 25% FOR PROFIT 3 50
HE BILLS THE CUSTOMER 17 50
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HOW MUCH DOES HE MAKE ?
I KNOW HOW TO ADD, BUT THAT PROBLEM COMES OUT DIFFERENT EVERY TIME
I DUNNO
ITS A LEAD PIPE CINCH TO ADD TWO PIECES OF PIPE, BUT I CANT ADD THOSE FIGURES
SEARCH ME
FIVE PER CENT ?
AH! HE DONT MAKE NUTHIN
YOU'RE RIGHT JOHNNY. HE DOES NOT MAKE ONE CENT AND HIS TIME AND KNOWLEDGE ARE WASTED.
M.D.S
"DOMESTIC ENGINEERING"

Ah! He Don't Make Nuthin'!

If you want to possess a special proof of this or any other of our cartoons, let us have your request at once. We have many applications for our cartoons for framing and want to take good care of all demands made.

AMONG THE WHOLESALERS

THE BURKE VALVE CO. INCORPORATED AT CLEVELAND, O.

The Burke Valve Co., of Cleveland, O., has been incorporated with a capital of $50,000 to manufacture valves and valve parts for pumps. The incorporators are: W. B. Burke, Tracy H. Duncan, William G. Rose, William H. West and Fred C. Backus.

WM. HEAP & SONS MAKING LARGE IMPROVEMENTS.

Wm. Heap & Sons, Grand Haven, Mich., manufacturers of plumbers' woodwork, are building a 60x130 ft. addition to their plant, which they expect to have completed by January 1, 1912. This concern is also constructing a system of industrial tracks and lumber sheds, making it possible to have all its lumber protected against the elements.

DECISION ON "BATHTUB" SUIT.

On Friday, October 13, Judge John C. Rose, in the United States Circuit Court at Baltimore, Md., rendered a decision in favor of the government in its dissolution suit against the Standard Sanitary Manufacturing Co. and others, the so-called "bathtub trust." Judge Pritchard concurred with Judge Rose, while Judge Goff dissented.

The action was brought under the Sherman anti-trust law. In case of an appeal it will go direct to the United States Supreme Court.

While this decision is in a separate case from the criminal action against the alleged trust at Detroit, the proceedings concern the same subject matter and are against the same defendants.

THE EXECUTIVE COMMITTEE OF THE N. D. H. A. TO MEET IN DETROIT.

The executive committee of the National District Heating Association will hold a special meeting at the Cadillac Hotel, Detroit, Mich., at 10 a. m., Wednesday, November 8, 1911. The meeting is called for the purpose of fixing the time and place and arranging the program for the fourth annual convention of that association. The committee consists of A. D. Spencer, Detroit, Mich., the president of the association; Warren Partridge, Springfield, Ill., first vice-president; R. D. DeWolf, Rochester, N. Y., second vice-president; Cadwallder Evans, jr., Pittsburgh, third vice-president; Geo. W. Wright, Baltimore, Md.; E. J. Keifer, South Bethlehem, Pa.; J. L. Hecht, Chicago, and D. L. Gaskill, Greenville, O., secretary and treasurer. Mr. Gaskill reports that the outlook for a splendid program is very encouraging.

THREE COMMITTEES OF THE AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS APPOINTED.

The Board of Governors at its September meeting appointed the following nominating committee for officers for 1912: S. A. Jellett, Philadelphia, chairman; Homer Addams, New York; N. L. Patterson, Chicago; F. G. McCann, New York; and J. M. Stannard, Chicago.

The date of the annual meeting has not yet been settled, but it is probable that it will be held on January 23, 24 and 25 in the Engineering Societies building, New York City.

A meeting was held in the society's office on Tuesday evening, October 10th, to consider organizing a chapter to be known as the New York Chapter with dues of $5 per annum. Past-President W. M. Mackay was elected temporary chairman and Jos. Graham temporary secretary. It was voted to hold the next meeting on October 24th at the society's headquarters.

The following committee on by-laws and constitution was appointed: H. J. Barron, Conway Kiewitz, Homer Addams, F. T. Chapman and Arthur Ritter. The Committee on Nominations for officers was appointed as follows: H. T. Gates, A. M. Feldman, E. E. Fox, Charles Kausen, and F. A. Wilson. Among those present were: R. P. Bolton, W. M. Mackay, Conway Kiewitz, H. T. Gates, A. M. Feldman, Homer Addams, F. A. Wilson, E. E. Fox, F. T. Chapman, Arthur Ritter, H. J. Barron, Jos. Graham, F. G. McCann, Charles Kausen and W. W. Macon.

PERSONAL MENTION.

A. W. Magill, the popular boiler salesman, who has been connected with the Chicago office of the Kewanee Boiler Co., of Kewanee, Ill., for the past six years, is receiving congratulations from his many friends in the trade on account of his appointment to the position of

A. W. Magill.—From Photograph Taken by Himself.

special representative on the road for this company. Mr. Magill has for years been one of the most popular heating salesmen in Chicago and he will be missed much by his many friends here, particularly at their outings and other social gatherings of the trade. He left this week on his initial trip, on which he will visit the larger cities in Iowa, Minnesota, Nebraska, Missouri and Utah.

FALL TOURNAMENT OF THE EASTERN TRADE GOLF ASSOCIATION.

On Thursday, October 5th, the links of the Essex County Country Club, at West Orange, N. J., was the scene of the annual fall tournament of the Eastern Trade Golf Association. President LeCompte had arranged with the purveyor of sunshine, and the day was all that could be desired. In the 18-hole medal play handicap competition for the president's silver cup, President LeCompte himself was the winner, but he declined to receive the first prize, which was therefore awarded to G. H. Bell, whose score was next. President LeCompte

taking the second, another silver cup. The third prize, also a cup, was won by H. S. Hadden. After a delightful luncheon in the beautiful club-house, the gold medals provided for the winners in the best ball foursome were the objects of earnest efforts, being secured by R. B. Hunt and A. McGonagle. W. H. Burnett was the victor in the match play against Bogey, winning a handsome copper cup with silver decorations. After the events of the day on the links were ended, the members partook of a very sumptuous dinner at the club-house, and the prize-winners received their trophies. The scores follow:

Morning Round—18-Hole Medal Play Handicap.

	Out	In	Total	Handicap	Net
W. G. LeCompte	60	53	113	36	77
G. H. Bell	41	42	83	5	78
H. S. Hadden	48	44	92	12	80
E. C. Molby	45	49	94	12	82
J. B. Garfield	43	40	83	0	83
A. M. Josephy	44	44	88	3	85
Stephen Roberts	48	43	91	5	86
R. B. Hunt	54	52	106	20	86
G. F. Brown	44	47	91	3	88
F. J. Oliver	51	49	100	12	88
A. S. Armagnac	53	50	103	14	89
C. N. Brizse	53	53	106	17	89
Farnham Yardley	58	49	107	18	89
W. H. Burnett	56	48	104	14	90
Geo. A. Suter	62	64	126	36	90
C. S. Wood	58	62	120	28	92
A. McGonagle	69	49	118	24	94
E. E. Gano	53	56	109	15	94
H. R. Watson	60	59	119	25	94
F. F. Cooper	57	63	120	20	100
W. C. Matlack	71	60	131	28	103
G. H. Chasmar	59	54	113	5	108
C. C. Hale	64	57	121	12	109
G. G. McDuff	75	59	134	25	109
G. M. Scott	76	68	144	30	114
J. A. Donnelly	89	65	154	36	118
F. K. Chew	73	88	161	34	127

Afternoon Round—Best Ball Foursome.

	Out	In	Total	Handicap	Net
H. B. Hunt & A. McGonagle	48	44	92	20	72
H. S. Hadden & J. A. Donnelly	48	43	91	12	79
E. C. Molby & E. E. Gano	41	49	93	12	81
W. H. Burnett & G. F. Brown	44	42	86	3	83
G. G. McDuff & H. R. Watson	57	52	109	25	84
J. B. Garfield & G. A. Suter	47	39	86	0	86
W. G. LeCompte & G. M. Scott	59	57	116	30	86
C. S. Wood & F. F. Cooper	60	49	109	22	87
C. N. Brizse & A. M. Josephy	49	42	91	3	88
G. H. Bell & F. K. Chew	45	46	91	2	89
S. Roberts & A. S. Armagnac	51	46	97	5	92
F. J. Oliver & C. C. Hale	56	48	104	12	92
G. H. Chasmar & F. Yardley	50	48	98	5	93

THE CRONE GAS-BURNERS.

How to save gas is a problem which encounters every man the moment he leaves the altar. He is from that time engaged in a perpetual combat with the insidious gas-meter. F. G. Crone, 336 Genesee St., Buffalo, N. Y., is to be hailed as a modern St. George, who undertakes to slaughter the meter-dragon which has such a severe "drag-on" the householder's purse. The Crone gas-burners are designed for use in the kitchen-range, hot-water heater or furnace. For these varying uses they are adapted by change in disposition in the fire-pot. Fig. 1 shows a set

Fig. 1.

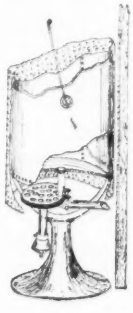


Fig. 2.

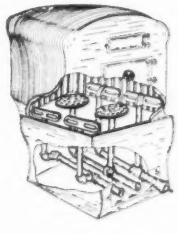


Fig. 3.

of two Crone burners. The Crone burners are made in varying sizes from 4-in. to 12-in. A special combination-burner is made to fit in the side-door of a coal-stove.

For heating hot water, the Crone burner is placed as shown in Fig. 2. The manufacturer claims that a tank of water can be heated in from 20 to 30 minutes, at a cost of about ½ cent per hour. The burner is put eccentric under the boiler, so as to keep far enough away from corner or wall. A jacket is also supplied as a protection against children's interference. Fig. 3 shows the application of the Crone burner to a square hot-water furnace. This is equipped with long and round burners, as shown. F. G. Crone will supply readers who are interested with a neat folder which effectively portrays and describes the many applications of the Crone burners. It contains an interesting cut which shows the effective circulation of air and gas. In writing for this, kindly mention "Domestic Engineering."

A HANDY PIPE-FITTER'S FOLDING BENCH.

It isn't always the articles that need the most description that are the most valuable. It would be very difficult to write three thousand words about a jack-knife, and yet most men can tell at a glance whether the knife is useful to them or not. E. Wilson & Co., Dept. A, 320

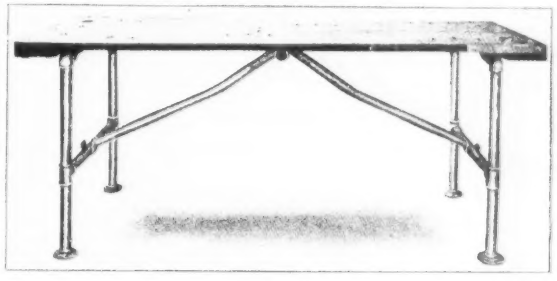


Fig. 1. Pipe-Fitter's Folding Bench, Set Up.

S. Sherman St., Chicago, have a device just as simple as a jack-knife, just as compact, and every bit as useful. It is a pipe-fitter's folding bench, which folds up like a jack-knife and takes up very little space in the shop, the wagon or the car. Fig. 1 shows the bench set up. Fig. 2 illustrates the bench when folded. It is substantially made of 1¼-in. pipe, with 1½-in. oak or maple top, bolted

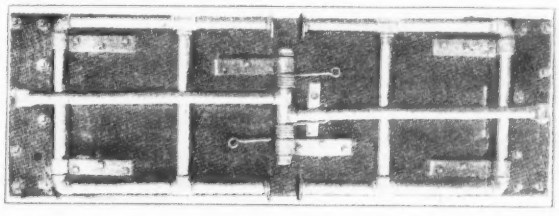


Fig. 2. Pipe-Fitter's Folding Bench, Folded.

to the frame. Its manifest portability, convenience and strength, should win for it respectful consideration by those it is intended to serve. Full particulars and quotations can be obtained by application to E. Wilson & Co. by mentioning "Domestic Engineering."

MORGAN-CLARK VACUUM HEATING AND FLUSHING SYSTEM.

The Morgan-Clark Vacuum Heating and Flushing System, supplied by the Morgan-Clark System Co., 580 Exchange St., Rochester, N. Y., is described in a neat booklet recently sent out by the company. The claim made for it is that the Morgan-Clark vacuum valve has superiority due to its divorce from expanding diaphragms, floats or other complicated devices liable to become deranged in operation. Four chief features of the valve's construction are a spring-adjustment, a wire-wiper, a movable slot by-pass and liberal opening. In connection with the valve there is always used a Morgan-Clark controller, located at proper points in each riser, and balancing the vacuum so as to avoid short-circuiting of steam-circulation in radiators or coils nearest to the vacuum-pump. The booklet describes also very clearly and gives a plan of an installation which is quite interesting. Copy of the booklet can be obtained upon application to the company. Mention "Domestic Engineering" when writing.

A NEW RADIATOR-SCALE RULE.

The H. B. Smith Co., 39 E. Houston St., New York City, is distributing to the trade a radiator-scale rule, designed to assist heating-contractors in measuring various sizes of radiation when estimating from plans. The

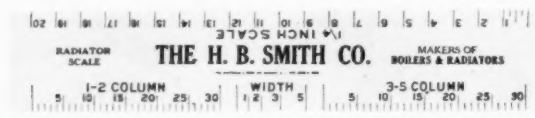
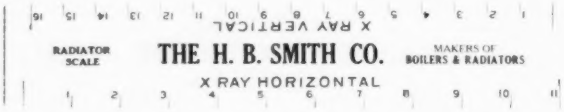


illustration shows both sides of the rule, which is an inch in width and a trifle over five inches in length. On one side there is a quarter-inch scale, showing the various sizes in 1-2 and 3-5 column radiation, together with the width of each, and on the opposite side a scale for



X-ray vertical and X-ray horizontal radiation. The rule is convenient for the pocket and can be obtained upon request to the company, by mentioning "Domestic Engineering."

THE BOWLUS PNEUMATIC FLUSHOMETER.

The illustration shows an interesting and extensive installation of the Bowlus pneumatic flushometer, manufactured by the H. C. Bowlus Mfg. Co., Springfield, O. This flusher is fed by direct water-line, connected to the feed-pipe by a brass union, furnished for ease of installation. In adjustment, water can be supplied in any quantity and at any desired velocity. Such adjustment is made exteriorly to the apparatus, and when made, a constant of supply and speed is maintained. The adjustable parts consist of a button beneath the tank and a counter-balance opposite the trip-handle. The former determines the times of flow and the latter adapts the device to the water-pressure. The interior of the flushometer has but three active parts—a ground-seated valve, a valve-lift and a piston. The apparatus is notable because of the absence of balls, diaphragms, floats, springs, tank, etc. It can be supplied to operate automatically or by hand. The manufacturers claim noiselessness of operation, non-leakage and adaptability to all domestic, municipal and public needs as special points of merit. Further information and quotations can be obtained upon request to the H. C. Bowlus Mfg. Co. In writing, mention "Domestic Engineering."

Eight Seat Action Closets in the Boys' Department and 12 in the Girls' Department at the Lagonda School, Springfield, O.. All Furnished with the Bowlus Pneumatic Flushometer.

A BASE-HIT AND A HOME-RUN.

The A. Y. McDonald Mfg. Co., Dubuque, Ia., has issued a 5-chapter novelissimo describing its new tub-base, a distinct base-hit that has made a home-run with the plumbing trade. It should appeal to the housewife, who, after all, is the real U. S. boss. It will catch her fancy because dust and deadly germs can no longer find lodgment under a bath-tub when it is placed on the McDonald base. It is fastened to the tub by four bolts and the waste-connection is exposed so that the joint is easily made. The Dubuque folks are sending out the novelissimo to all inquirers. It is well illustrated and will repay perusal. Refer to "Domestic Engineering" when you write.

THE "CENCO" PIPE-HANGER.

C. Erwin Norman & Co., 29 W. Michigan St., Chicago, are experiencing considerable success in the marketing of their "Cenco" pipe-hanger. The illustration will show the practical steam-fitter the merits of these hangers. They

The "Cenco" Pipe-Hanger.

are accompanied by a perforated extension-bar in 5-ft. or 10-ft. lengths, the holes being ½ in. apart. Full information can be obtained by application to C. Erwin Norman & Co. Mention "Domestic Engineering" when writing.

TRADE LITERATURE RECEIVED THIS WEEK.

The Watson Specialty Co., Terre Haute, Ind., is sending to the trade a handsomely colored card, advertising the merits of the Watson heat-generator. We are not going to tell the readers what the card is like. It will be up to them to find out by applying to the company for a sample. We advise the trade that the production is one of the most beautiful specimens of color-printing that we have seen. Copy can be obtained upon request, and when you write, mention "Domestic Engineering."

The Leader Iron Works, Decatur, Ill., is sending out a new booklet, which presents in an effective way profitable methods of selling Leader water systems. It deals with the different types of water systems that the plumber may be called upon to install. It illustrates and describes these types. It shows photographs of plumbers who are finding the installation of Leader water systems profitable, giving also illustrations of their stores and some of the installations they have made. The booklet outlines live methods of interesting prospective customers

in water-system installation. The last two pages are covered with valuable pointers for those who desire to extend their business efforts along these lines.

The company is also sending out an attractive card-hanger illustrating the Leader water system, printed in colors and describing by pointed arrows and printed matter every constructive point of the apparatus. This will be found very effective in dealing with customers. Both booklet and card-hanger can be obtained from the Leader Iron Works by mention "Domestic Engineering."

The Detroit Lubricator Co., Detroit, N. Y., has issued a 4-page leaflet illustrating and describing the company's hand oil-pumps. These are made with brass and glass bodies and with push or lever operative construction. The push-pump has no spring check-valves. Those interested in up-to-date lubricating devices can secure this leaflet by applying to the company. When writing, mention "Domestic Engineering." Every such mention lubricates the wheels of business.

THE NEW MARK CATALOG.

If we had been a member of the Mark Manufacturing Co., Chicago, we would have christened one special line of Mark products "Veritas." We refer to the well supplies and the christening would be based on our remembrance of the old Latin saying—"Truth lies in the bottom of a well." In all well-work it is certain that the truth of the statements of the manufacturers of well-supplies will soon be brought to light. From the prosperous appearance of the new Mark catalog we would judge that the company's products have justified the claims made for them. The work is bound in black leather and inscribed in gold lettering. It covers most effectively the wide range of goods manufactured and the illustrations are printed in black and bronze, the bronze showing clearly the brass parts of the apparatus.

The company manufactures wrought pipe, black and galvanized, for steam, gas and water; oil-country goods; steel boiler tubes; well-points and well-casings; working barrels and well-valves; all supplied in ample variety for every operative need. To do justice to the catalog it would be almost necessary to reproduce it. Not the least interesting part of it is that devoted to the minor supplies, such as perforated sheet brass, brass wire cloth, pipe lifters, benders, holders and cutters, clamps and wrenches. Those of our readers whose location brings them into contact with well-work and also those who do wrought-pipe work will find the Mark catalog a valuable accessory. It can be obtained upon request from the Mark Manufacturing Co., P. O. Box G, Chicago. In applying for it please refer to "Domestic Engineering" as the incentive to inquiry.

PLUMBERS AND TECHNICAL EDUCATION.

A supposed grievance of a young man who was refused permission to attend the plumbing classes at the Applied Science Department of the University of Sheffield has been aired in the Sheffield newspapers, according to "The Ironmonger," London. It appears that the applicant, who is employed in a factory to prepare tin linings for boxes used in the export trade, desired to learn something of the plumbing craft in order that he might increase his usefulness to his employers by executing plumbing repairs about the works. The prospectus of the Sheffield Plumbing Classes distinctly states, however, that instruction at these is limited to journeymen plumbers or apprentices to the trade. The classes owe their origin to the local master plumbers, who promoted them with the object of providing technical education to those who are learning the craft or practicing it. Their point of view is that plumbing cannot be learned at classes, and that the instruction given there merely supplements the experience gained in the workshop. They consider, in brief, that while technical education cannot make a plumber, it can and does greatly add to the capability and value of the shop-trained plumber. The employers are not anxious to extend the existing competition with men who can do good sound work by increasing the number of those possessing a smattering of the craft, and they think that this would be the result of opening the classes to all and sundry.

NEW "HENDRICKS'" A BUSINESS-AID.

S. E. Hendricks Co., 74 Lafayette St., New York City, has just issued its 20th annual commercial register. It furnishes a complete classified list of manufacturers, covering every branch of the architectural engineering, electrical, mechanical and other trades and professions. It supplies an urgent business-need to buyers and sellers. Nearly every business-man is confronted quite frequently with a demand for some apparatus or supply somewhat out of his ordinary buying scope. Most such inquiries require immediate treatment at such times. A Hendricks' register means time and worry saved, an instantaneous road of communication with the manufacturer and a prospective deal. The new register contains 1,419 pages and over 350,000 names and addresses. The book can be used for either purchasing or mailing purposes, its classification being unique in this regard. Trade names of articles manufactured by firms and companies add much to the directory's value. The cost is only $10, express prepaid, and one business deal made a year through its pages of reference will pay a dividend on the investment. The company will forward you on request a classification-pamphlet which will assist you in understanding the comprehensive character of the work. Mention "Domestic Engineering" when writing for it.

"THE THEORY AND PRACTICE OF TECHNICAL WRITING."

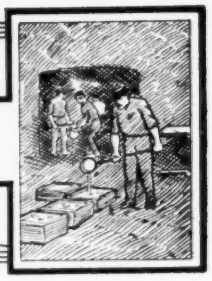
Did you ever think of writing a book on trade-subjects? We would be willing to gamble that some of those who read these lines have in mind, even at this moment, the production of a world-startler. One of the chief reasons why practical men do not contribute more to the world's fund of knowledge is that they are not sure of the best way to present their ideas to the public. Samuel Chandler Earle has just written a book to help the intending author in his initial efforts. It is also designed to perfect the work of those who have already taken upon themeslves the burden of national education. The title of the book is "The Theory and Practice of Technical Writing." It is divided into two parts, the first devoted to a study of the principles of logical structure and the last to a practical application of these principles. This new work supplies a decided need. It can be secured from the publishers, The Macmillan Co., New York City, or from the Book Department, "Domestic Engineering," 443 South Dearborn St., Chicago. The price is very reasonable, $1.25 net. The book has 300 pages and a number of helpful illustrations.

CHICAGO PLUMBING-SUPPLY MAN PLAYS IMPORTANT PART IN CHINESE REVOLUTION.

An interesting relic of his sojourn in China in 1900 is possessed by John J. Riley, 4841 Washington Boul., Chicago. Mr. Riley, who is connected with the plumbing-supply business, was a sergeant in Co. B, 9th Infantry, U. S. A., and spent nearly a year in China at the time of the Boxer uprising, entering Pekin when the Americans were first over the walls, Aug. 14, 1900. Just before his regiment left Pekin, a fire broke out in the Hall of Records, in the Forbidden City, and the American troops were active in their assistance. Mr. Riley was among those who entered the emperor's private apartments, and he snatched from the altar of the emperor's private god (which no one else is allowed to worship) the beautiful altar-cloth which he described to a reporter of the "Daily News" recently. Since the present revolution began, this cloth has assumed added value, and agents of the revolutionists are now trying to get it, in order to display it in Chinese temples as a proof that the claims of the Manchu dynasty to the protection of heaven are baseless. No greater proof of the falsity of these claims can be given, it is believed, than the sight of this precious cloth from the emperor's private altar, carried away so long ago by a "foreign devil." Mr. Riley enlisted in Chicago, and has served in the Philippines, as well as in China. During his year in the latter country, he fought in the battles of Tientsin and Yangtsum, as well as in the capture of Pekin.

The next issue of "Domestic Engineering" will be "The Public-Comfort Station Number. Watch out for it!

THE METAL MARKET



MORE BUSINESS IN FOUNDRY IRON.

Lower prices have been named for steel-making irons, but the market has broadened and the pipe foundries have been large purchasers of pig-iron. It is probable that they have purchased, at least, 50,000 tons of Northern and Southern iron. Some little business has been closed for regular foundry iron for 1912 delivery and this has been done at the prices ruling this year. Some merchant furnaces have been put in blast and this will probably supply the demand for the time being. The stocks of pig-iron at the furnaces which report to the Eastern Pig Iron Association showed a decline in September and there was likewise a reduction in the stock of iron at Virginia furnaces. In the South the stock of iron, especially in Alabama, was reduced some 15,000 tons. The market is in much better state than it has been for weeks. Prices are as follows:

No. 2 Southern foundry, Birmingham	$10.50
No. 1 Northern foundry, New York	$15.25 to 15.50
No. 2X, Northern foundry, New York	15.00 to 15.25
No. 2 plain, Northern foundry, New York	14.50 to 14.75
No. 2 Northern foundry, Chicago	14.50 to 15.00

OLD IRON.

Sacrificed sales are the rule and quotations given below are largely nominal, as they represent the ideas of buyers and sellers rather than prices at which actual transactions occurred. Quotations for New York delivery are as follows:

No. 1 yard wrought long	$10.50 to $11.00
No. 1 yard wrought short	9.50 to 10.00
Heavy-melting steel scrap	9.50 to 10.00
Machinery cast	10.00 to 10.50
Wrought pipes and tubes	9.00 to 9.50
Malleable castings	10.00 to 10.50
Wrought turnings	5.50 to 6.00
Cast borings	5.00 to 5.50
Stove plate	8.00 to 8.50
Light iron	4.00 to 4.50

CONTINUED SCARCITY OF TIN.

Notwithstanding the large arrivals of tin last month, these have been absorbed by consumers in the interior and stocks are now meager. Prices have advanced moderately and tin is now selling at 41.25 cents. The London market is not quite as firm as it was, but the demand for tin all over the world seems to be normal.

LEAD.

A further cut of 10 points was made by the American Smelter & Refining Co. and lead is now held at 4.25 cents New York and 4.15 cents in St. Louis. It looks as though the leading interest is trying to make the pace too hot for the outside interests. Considerable business has been taken at these figures.

A STEADY MARKET FOR COPPER.

The report of the Copper Producers' Association was fairly satisfactory and the copper trade is in a much better position. Domestic consumers have not large stocks on hand and are compelled to buy month by month as their needs warrant. This is the one thing that keeps the price of copper from going down and is also the factor which will probably cause the price of copper to advance rapidly when any new demand does come. Large lots are sold at 12.50 cents for Lake and 12.25 cents for electrolytic.

SPELTER.

The market has advanced and prices are now higher at 6.15 cents New York and 6 cents St. Louis.

NEWS FROM WISCONSIN.

Neenah.—A steam-heating plant will be installed in the Lake street hotel and saloon which is being erected for Walter Bros. The contract has been awarded to Frank Haertl, who will soon have the plant ready for operation.

Oshkosh.—The board of public works has issued a call for bids for furnishing material and doing all the work of the gas-piping in the Orville Beach Memorial Manual Training School, according to plans and specifications on file in the offices of the city clerk and Architect Wm. Walters. W. A. Marden, Thos. McEnary and Fred Heintz are members of the board.

Kewaunee.—The Kewaunee Hardware Co. has been awarded several contracts to install plumbing and heating systems in new residences.

Sturgeon Bay.—The heating mains on Cedar street will be extended as far north as Mirmingham's shoe-store by the Wiest & Losli Co. for $1,918.40, which includes about 400 ft. Many merchants are willing to advance money for more extension and will take the heating service if the extensions are put in.

Sheboygan.—Bids were received recently by the common council for the new 8,000,000-gal. pumping-station for the municipal waterworks system. The pump will cost about $25,000 and the foundations and new pump-house will cost nearly $5,000 each. The pump-house will be 20x50 and will be located south of the present station. Mayor Dieckmann states that the station will not be completed before next summer.

Milwaukee.—The Master Plumbers' Association is contemplating the formation of a mutual insurance company to insure its members against the risks incurred by the passage of the wage compensation act passed by the last Wisconsin legislature. A committee has been selected which will confer with Attorney H. J. Killilea with a view of drafting a constitution for the proposed company. It is understood that the plans for the association have been submitted to Insurance Commissioner Ekern at Madison and have been given his approval. The plans are similar to those of the insurance company of the Wisconsin Manufacturers' Association, which was organized some time ago by firms which are members of that association.

Evans City, Pa.—The Oakes Heating & Plumbing Co. has just been awarded the plumbing, heating and lighting contract on the $3,500 residence of Mrs. Sarah McMillen.

Olean, N. Y.—The Olean Plumbing & Lighting Co., Hickey Bros., proprietors, has been awarded the contract for remodeling the present heating systems and installing vacuum steam-heating systems in all the buildings of the St. Bonaventure College and Seminary, Allegany, N. Y., at a contract price of $12,000. This company also has the contracts for remodeling the steam-heating apparatus in St. Stephen's Church, on S. Barry street; for installing new hot-water heating systems in the residence of Charles Williard, on N. Clinton street; W. S. Walker's residence, on N. Fourth street, and the new office building for the Union Cutlery Plant, on N. Ninth street, in this city.

PROGRESS IN PITTSBURGH.

The completion of the formation of the Pittsburgh Industrial Development Commission, headed by Wm. A. Donkin, is bound to receive the hearty support of all heating and plumbing interests in the Pittsburgh district. The organization means the pushing to the front of Pittsburgh contractors, workmanship and goods. All these things were explained at a recent meeting of the Manufacturers' and Contractors' Club, of which Joseph A. Weldon, of the plumbing and heating firm of Weldon & Kelly, of this city, is treasurer. Mr. Weldon, at a recent meeting of the Manufacturers' and Contractors' Club, brought up the question of better and cheaper housing conditions in the Greater Pittsburgh district. He compared the building laws of Philadelphia, Baltimore and Pittsburgh, also the sanitary laws existing in the larger eastern cities. The talk of Mr. Weldon was timely, and was listened to with considerable interest. The Industrial Development Commission has made it plain that it intends to pay particular attention to emphasizing the value to builders of placing their plumbing, heating and lighting contracts with the trade in Pittsburgh. It is also pointed out that with finished products being made in the district, builders can be better served by dealing with local supply houses than by placing their business elsewhere.

A new general heating and ventilating company has been formed in Pittsburgh under the name of the McGinniss Co. An application for a charter under the laws of Pennsylvania was made at Harrisburg, October 16th. Those interested in the new corporation are: Joseph E. McGinniss, William S. McGinniss and Garnet R. Klein. The company will make a rigid canvass for new business in this territory.

Plumbing in the new addition being erected at the Ohio Valley Hospital at McKees Rocks, a suburb of Pitsburgh, has been awarded to the Weldon-Kelly Co. The heating contract has been given to the McGinniss & Smith Co. This firm has also just secured the heating contract on the $14,000 dormitory for the J. M. Gusky Orphanage Home on the North Side.

NEWS FROM OHIO.

Canton.—A plumbing code is in process of construction by the city officials and it is expected it will be presented to the city council within a few weeks. A number of perplexing questions have arisen and the object is to thresh out all of the difficulties before presenting the code to council.

Columbus.—The William H. Conklin Co. was the lowest bidder on the heating and plumbing for the state serum farm, to be erected near Reynoldsburg. The company was awarded the plumbing and gas-fitting contract for $3,373 and the heating contract at $2,559.

Elmore.—This village has decided to build a system of waterworks and work will be started at once.

Akron.—The city council has adopted an ordinance creating a plumbers' and sewer-builders' examining board consisting of the president of the city board of health, or deputy vice-president, the inspector of buildings and three practical plumbers, two of whom shall be master plumbers and one a journeyman plumber. It shall be the duty of the examining board to examine all applicants for licenses for master plumbers and sewer-builders and to determine their qualifications. The board is also authorized to make rules and regulations to govern its work. Only one member of a firm need be examined. Application for license as plumber or sewer-builder must be accompanied by a bond of $500, conditioned that the applicant will save the city harmless from all damages that may arise from negligence. The licensing fee is $5 for master plumbers and $1 for sewer-builders, and the license shall expire December 31st each year.

Cambridge.—The city council has passed an ordinance authorizing an expenditure of $15,000 for the extension of the waterworks system.

PACIFIC COAST COMMENTS.

The situation has brightened here materially within recent weeks. Several contracts of considerable size have already been let and a number of others are on hand for the immediate future. The heavy rains of a couple of weeks ago in northern and southern California and this week's storm in the San Francisco section, have opened the season for the jobbing plumbers who are now very busy with the usual pre-winter work. General building continues good, though the building of frame residences which has characterized the summer on both sides of San Francisco bay, will drop off now that the fall rains have begun in earnest.

From other points on the Coast, advices are equally encouraging. Portland, Ore., and Los Angeles, Cal., are particularly active, according to the plumbing supply men. Seattle has been very quiet for a number of months, but this week the news reached here that contracts were actually being let on the 42-story L. C. Smith building at that place. This will be by far the highest building on the Coast. The plumbing and heating contracts have not yet been let, but as the contract for structural steel calls for 4,500 tons, the engineering contracts can hardly be insignificant.

The San Francisco plumbing supply houses have reduced their prices on pipe following the decline in the eastern market the first of the month, but the reduction has not brought out any increased demand from the trade. The pipe business for the past summer has been unusually quiet, and so far there is little indication of improvement. Supply dealers are carrying very moderate stocks and are unwilling to place contracts for future supplies.

The Morris Stulsaft Co., of 325 Guerrero St., contracting plumbers who have been doing some jobbing in a small way for some time, have decided to branch out and become "legitimate" jobbers of a full line of plumbing supplies on a much larger scale than they have hitherto attempted. To this end they have leased a four-story and basement building on Second and Natoma streets, and will move in as soon as the fixtures are installed. Work will shortly begin on another structure to be used as an annex for pipe storage. The company is now placing orders with manufacturers for a jobbing stock of plumbing supplies.

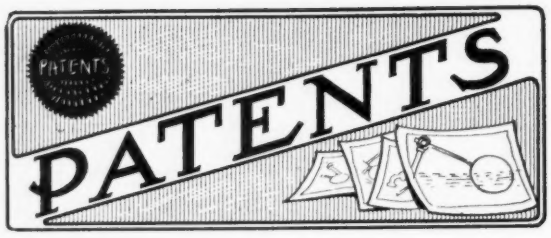
The advent of the Morris Stulsaft Company on Second street serves to make this locality still more emphatically in the center of the wholesale plumbing business. In this immediate neighborhood are already located: The salesrooms of the George H. Tay Co., the Dalziel-Moller Co., Robert Dalziel, jr., the offices of Louis Lipp and of the John Douglas Co. The Mark-Lally Co. has also arranged for the construction of a fine four-story reinforced concrete building on Second street to be used for its offices and salesrooms, and the Crane Co.'s large building is at Second and Brannan streets.

The contracts have been let for the construction of a seven-story and basement building at the corner of Bush and Stockton streets. The Lenning Engineering Co., of this city, secured the contract for the steam-heating at $1,698.

Contracts let this week on the San Francisco Hospital include the steam, gas and water-piping, to be installed by the Central Electric & Heating Co., for $19,450, and disinfectors, to be furnished by the John G. Sutton Co., for $1,580.

W. S. Snook & Son have taken a plumbing contract for an apartment-house to be erected at Ellis and Jones streets, amounting to $9,250. The steam-heating contract, amounting to $2,076, was taken by the John G. Sutton Co.

Tulare, Cal.—Schwartz & Riley have formed a partnership to enter the plumbing business. Mr. Riley has been associated with another house here for some time and Mr. Schwartz came recently from Mexico.

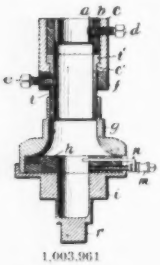


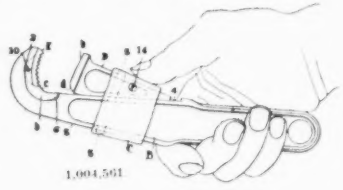
Heating Department.

1,003,961. Tool for cutting and threading pipe. John Geary, Leominster, Mass., assignor of one-half to Wilfred J. Wetherbee, Leominster, Mass. In a pipe-cutting and threading device, the combination of a casing adapted to be fixed to a pipe and having an inwardly projecting annular shoulder on the end, a hollow lead screw rotatably mounted on the end of said casing and having a circular head fitting behind said shoulder, a screw-collar on the lead screw abutting against the edge of the casing constituting a check-nut and having means by which the lead screw itself can be fixed to the pipe, a stock threaded on the lead screw and having means for supporting a cutting-off or threading die, and an end plate on the stock having a non-circular end thereon arranged substantially in axial alinement with the axis of the lead screw and casing and beyond the end of the stock.

1,004,561. Pipe-wrench. William Henry Joseph Fitzgerald, Braintree, Mass. A pipe-wrench comprising a handle-bar having a tapered shank and an integral jaw, said jaw having an inner serrated face and side enlargements terminating in shoulders at either side of said shank, in combination with a slidable jaw having a tapered shank, and a yoke of wedge-shape adapted to engage said shoulders, whereby the movement of the yoke is limited relatively to the slidable jaw.

1,004,578. Valve. Joseph P. Lavigne, Detroit, Mich. In a valve, the combination with a casing having an apertured inner flange, a valve consisting of a pair of telescoped inverted cups having apertures adapted to register with each other, and a stem detachably supporting both of said cups for angular adjustment relative to each other, means


1,003,961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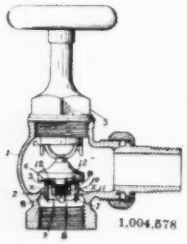
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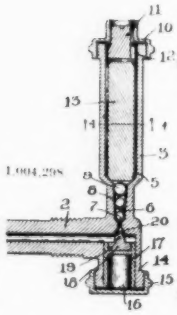
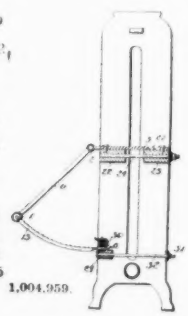
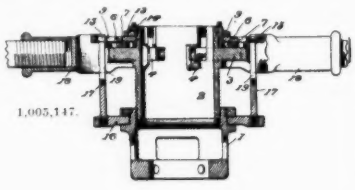

1,004,298

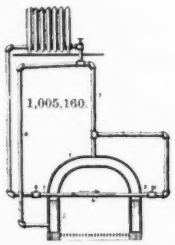

1,004,959

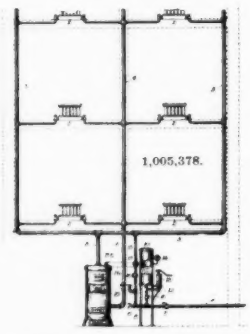
for firmly securing said cups to the stem, of an independent actuator-stem longitudinally movable in said casing, and flexible means for coupling said actuator and valve stem for co-movement.

1,004,298. Automatic radiator-valve. Arthur O'Brien, Butte, Mont., assignor of one-half to Alf C. Kremer and William M. Kirkpatrick, Butte, Mont. In a radiator-valve a tubular stem, a casing integral therewith having a conical downwardly tapering passage in the lower end thereof, a plurality of various sized ball-valves adapted to seat in said passage, an expansion rod within the casing, an adjusting-screw in the upper end of the casing, an extension integral with the stem and having an open lower end, a cylindric body therein having a seat at its upper end, a float-valve below the inlet to the casing normally supported by the cylindric body adapted to prevent water passing from the stem into the casing, and a cap on the lower end of the extension adapted to permit the removal of the float without disturbing the valves in the casing.

1,004,959. Adjustable foot-rest or shelf for radiators. Horace M. Allen, Detroit, Mich. In combination with a radiator having a plurality of loops, a foot-rest or bracket, supporting members adjustable vertically between said radiator loops, the said foot-rest or bracket being pivoted to the upper supporting member, a brace therefor comprising two telescoping portions, means for securing the two portions in extended position with reference to each other, and means for securing the brace in extended position, substantially as described.


1,005,147.


1,005,160.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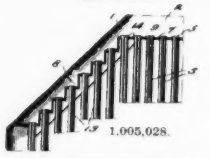
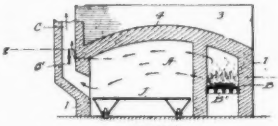

1,005,028.


1,005,743.

1,005,147. Taper-thread-cutting Tool. Bradford Borden and William A. Nearcher, Warren, O., assignors to The Borden Company, Warren, O., a corporation of Ohio. In a screw-cutting device, the combination of a frame, a member longitudinally and rotably movable therein, dies or chasers movable in said member, another member longitudinally movable with respect to said first member and held against longitudinal movement relatively to said frame and a cam plate rotably secured to said first member and adapted to position said dies or chasers, said second member being adapted to engage said cam-plate positively to rotate the same relatively to said first member upon longitudinal movement of the latter in said frame.

1,005,160. Heating Apparatus. Harvey La Verne Cole, Rockford, Ill. A steam-heating apparatus, comprising a main steam generator, a supplemental steam generator within the combustion chamber of the main steam generator, a radiator, means for supplying steam from the main steam generator to the radiator, also means for intermingling the steam of the supplemental steam generator with that of the main steam generator on the supply side of the radiator, means for returning the water of condensation from the radiator to the supplemental steam generator, and a check valve situated on the intake side of the supplemental steam generator and opening in the direction of the flow of steam to said radiator.

1,005,378. Apparatus for Heating Buildings by Hot Water, Felix Walter, Highfield, Md. In an apparatus for heating buildings by hot water, the combination of a heater having draft and check devices, radiators, water conducting and return pipes connecting the heater and radiators, an initial cold-water supply-pipe connected with the main conducting pipe, a combined retainer and expansion tank also in communication with said initial cold-water supply-pipe and interposed between the sup-

ply and the heater, an air-pump therefor, a reversible motor interposed in the initial cold-water supply-pipe between the main conducting pipe and the combined retainer and expansion tank, and connections between the reversible motor and the draft and check devices of the heater, substantially as set forth.

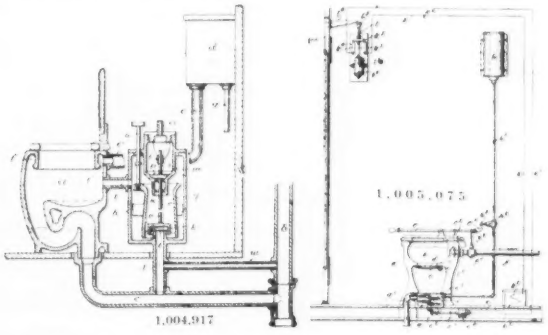
1,005,028. Radiator. Herbert Champion Harrison, Lockport, N. Y. In an angular radiator structure, the combination of a separator plate having perforated straight and bent portions to conform to the shape of said structure, the distance between the perforations in the bent portions being a plurality of times greater than the distance between the perforations in the straight portion; and a plurality of tubes of uniform size passing through each set of perforations and making the same angle with said plate, substantially as described.

1,005,743. Garbage-Crematory. Ralph E. Nye, Hobart, Okla. A crematory, substantially as described, comprising an incinerating chamber, a fire-box alongside the front end of the said chamber and discharging at its rear end into the chamber at the rear end of the latter, chimneys leading from the incinerating chamber near the front and rear ends thereof and at the opposite side from the fire-box whereby the gases from the fire-box may be directed either transversely of the rear of the incinerating chamber or across the incinerating chamber and toward the front end of said chamber, dampers in said chimneys, doors controlling the end of the incinerating chamber and a car for supporting the material to be burned movable into and out of the incinerating chamber, substantially as set forth.

Plumbing Department.

1,004,917. Ventilating apparatus for closet-fixtures. Charles E. Shadall, Milwaukee, Wis., assignor of one-fourth to Frederick L. Horneffer and one-fourth to Frank H. Durbin, Wauwatosa, Wis. The combination of a casing having an air-inlet and a discharge-connection, a nozzle having a valve-controlled fluid-pressure supply-connection, and a movable deflector adapted to spread the jet of fluid issuing therefrom.

1,005,075. Sanitary toilet. Morris B. Rosenstock, New York, N. Y. In a sanitary toilet, the combination of a bowl or hopper, a secondary chamber or receptacle into which the contents of the bowl or hopper are discharged and in which such contents are retained for a period of time, means for supplying a disinfectant to said chamber, and means for thoroughly mixing the contents of the chamber with the disinfectant.



1,005,044. Automatically-Operated Valve. Leonard Koch, Bisbee, Ariz., assignor of one-third to L. A. Brown and one-third to J. W. Walls, Bisbee, Ariz. A valve of the character described comprising a water inlet pipe having a down-turned end formed with a valve casing a removable cap on the lower end of said casing, said cap having a discharge passage a flexible valve-seat arranged in said cap and clamped by the same against the bottom of said casing, a ball-valve to engage said seat, a plunger supporting-bar arranged below said cap, a plunger pivotally connected to said bar and adapted to project upwardly through the discharge passage in the cap and to unseat said ball-valve, a supporting rod pivotally connected at its upper end to said casing and at its lower end to one end of the plunger supporting-

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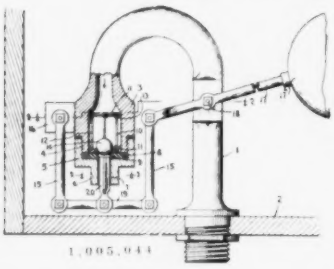
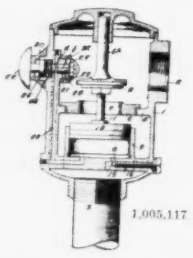
bar, an operating rod pivotally connected to the opposite end of said bar, and a pivotally-mounted float-operated lever pivotally connected to the upper end of said operating rod, whereby the valve is automatically opened to permit the discharge of water through said valve-casing.

1,005,117. Flushing-Valve. Julius S. Judell, Milwaukee, Wis. In a device of the described class, the combination with a chambered casing, provided with an inlet and an outlet a piston-actuated main-valve controlling the de-



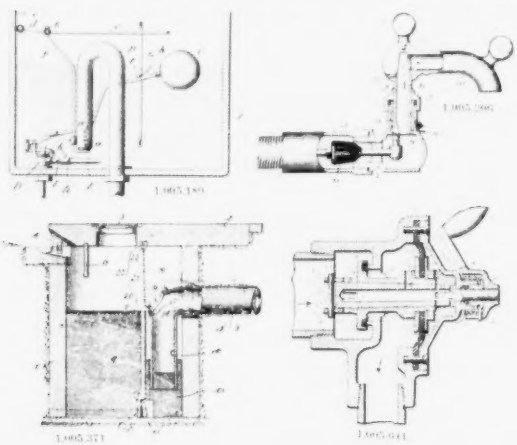
1,005,944



1,005,117

livery of fluid through the casing from the inlet to the outlet, a cylinder below the valve, a piston in the cylinder connected with the valve, a cylinder supply-duct leading to the cylinder from above the valve, and an exhaust-duct leading from the cylinder to said outlet,—of a starting valve, comprising a slide valve member extending across the end of the cylinder supply-duct to the interior of said casing and provided with a passage, adapted, when said member is in open position, to connect the supply-end of the casing with said duct, and a head on the inner end of said member, seating, when the valve member is in closing position, against the interior wall of the casing,—the ends of said valve passage being also closed, in such position, by the casing wall; whereby the duct is closed by said sliding member against back pressure from below the piston to prevent such back pressure from being applied to the valve head and opening the starting valve when the main valve and piston are moving to closing position.

1,005,189. Flushing-Tank. John L. Fruin, New York, N. Y. A siphon-jet flushing-tank having a suitable frame-work and provided with a cut-off deflector normally lying

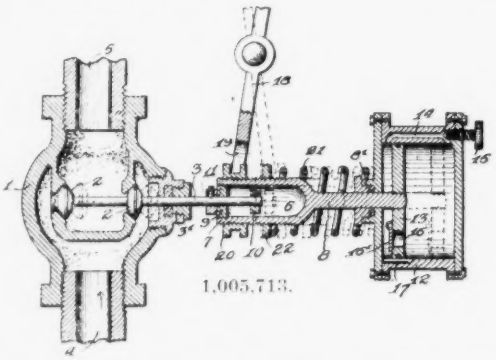


between the inlet jet and the mouth of the siphon, a deflector-arm on which said deflector is mounted and fixed to a shaft mounted in the frame-work of the tank and a handle for turning said shaft whereby said deflector is removed and returned to said normal position as occasion requires.

1,005,206. Water-Distributer. William H. Heidmann, Eau Claire, Wis. A faucet comprising a combined valve-casing and spindle-bearing shell, a valve and its stem, a tubular spindle having an open lower end and a crank-rod extension below its bore engaging an eye of the valve-stem, packing for the spindle, means for holding the packing in said bearing-shell, and a nozzle in union with said spindle open thereto.

1,005,371. Catch-Basin. Frank L. Union, New York, N. Y. In a catch-basin, the combination of a chamber, provided with an inlet-mouth, a partition in said chamber, back of said mouth, and an outlet pipe extending downwardly into the space behind said partition, said outlet pipe having a valve-controlled relief opening located at the approximate level of the upper edge of said partition.

1,005,641. Flushing-Valve. Henry Robbins Gilson, Beaver, Pa., assignor of one-half to Frank C. Schroeder, Ambridge, Pa. In a flushing-valve, a casing having an inlet, an outlet, and a valve seat, a valve member having a flange adapted to seat against the valve seat, the valve member being disposed through the valve seat, and having a longitudinal opening with a port at one side of the valve seat leading to the opening, a diaphragm secured to the valve member at the other side of the valve seat and forming a wall of a chamber, a second valve member having a longitudinal opening and disposed in the opening in the first-mentioned valve member, there being a port in the second-mentioned valve member leading to its opening, which is adapted to communicate with the first-mentioned port to open communication from the inlet to the said chamber, a port in the first-mentioned valve member between the valve seat and the diaphragm, a port in the second-mentioned valve member, which is adapted to communicate with the last-mentioned port, and means for moving one of the valve members relatively to the other.



1,005,713.

1,005,713. Flushing-Valve Device. Ralph W. Killin, Memphis, Tenn. In a device of the character described, a flushing-valve chamber, a flushing-valve in said chamber having a stem projecting out of said chamber, a cylinder serving as a dash-pot, a piston located in said cylinder, a piston-rod connected with said piston and projecting out of said cylinder and having on its outer end an elongated head threaded on its exterior, and provided with a closed chamber into which projects the end of the stem of the flushing-valve, a stop on the end of said stem in said closed chamber, and a stop on said stem on the outside of said chamber, a screw-threaded collar mounted on and adjustable on said elongated head, a coil-spring encircling a portion of said head and the piston-rod projecting from the cylinder and having one end bearing against said cylinder and its other end bearing against said collar, a screw-threaded grooved collar adjustably mounted on said elongated head, and an operating lever connected with the grooved collar.

WATERBURY, CONN., MASTER PLUMBERS ELECT OFFICERS FOR 1912.

The Master Plumbers' Association of Waterbury, Conn., met in annual session in the rooms of the Business Men's Association on the evening of October 10th and elected the following officers: President, E. J. Daly; vice-president, J. M. Gill; secretary, James H. Ellerby; treasurer, George W. Minor; trustees, W. S. Carberry, J. M. Daly, W. B. Toucey; sergeant-at-arms, M. F. O'Hara; auditing and finance committee, J. H. Ellerby, P. H. Garrity, M. J. Donnelly. Twenty-four master plumbers were present at the meeting and nearly all participated in an interesting discussion of the sanitary conditions of the plumbing being installed in Waterbury today as compared with similar work in other municipalities.